IBM WebSphere Business Modeler: Process Simulation and Analysis

(Course code VB186)
(Classroom Course code WB186)

Student Exercises

ERC 1.0

WebSphere Education

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Solution:. S1

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Exercise 1. There is no exercise for this unit

Exercise 2. There is no exercise for this unit

Exercise 3. There is no exercise for this unit

Exercise 4. Simulation and analysis

What this exercise is about

This lab will provide hands-on experience in the simulation and analysis functionality in WebSphere Business Modeler.

What you should be able to do

At the end of the lab, you should be able to:

- Run a process simulation
- Use global simulation settings
- Run a simulation with global simulation attributes
- Use local simulation attributes
- Run a simulation with local simulation attributes

Requirements

Previous labs should be completed successfully.

Exercise instructions

In this exercise, you will run a simulation using a project called FMC Project which is already built for you. There is a loan application process called **Credit Request** in this project where a customer will apply for a loan. The credit request can be either rejected or accepted at the end of the process.

Part 1: Opening workspace

__ 1. To launch Modeler, click **Start** —> **Programs** —> **IBM WebSphere** —> **Business Modeler**.

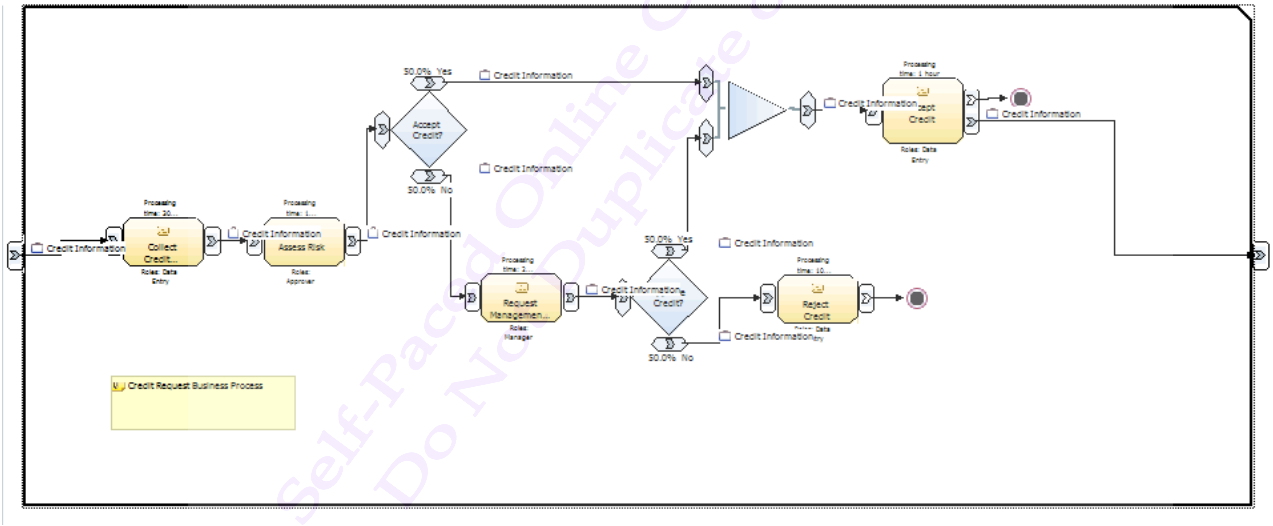
__ 2. Browse to **C:\ClassWorkspaces\SimulationLab**.

__ 3. Click **OK**.

Part 2: Examining the credit request process

Before running the simulation, take a look at the Credit Request process in the Project Tree.

__ 1. Open the Credit Request process by right-clicking the **Credit Request** process in the **FMC Process Catalog** in the Project Tree.

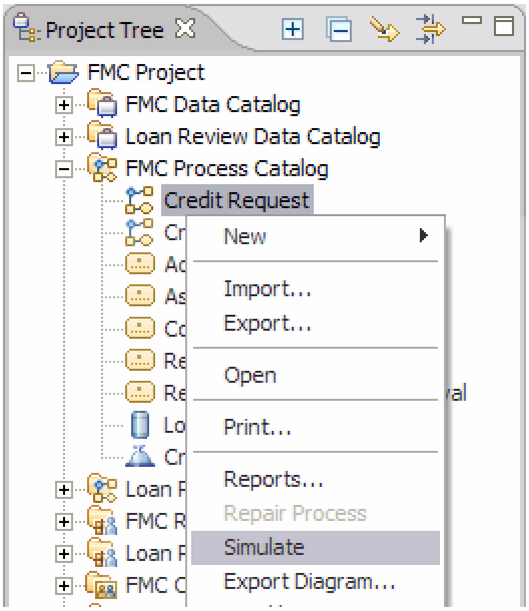


__ 2. Close the Credit Request process editor.

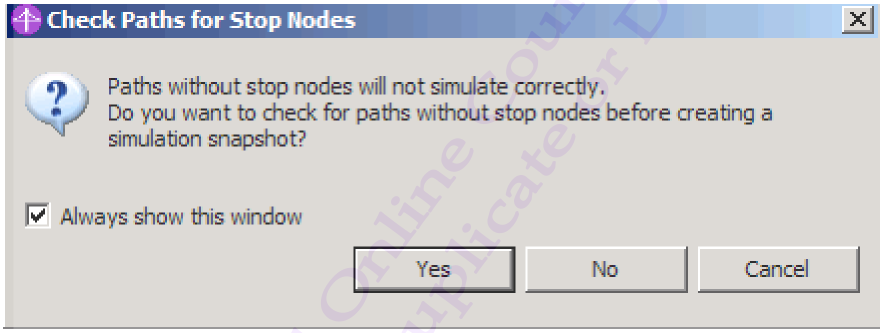
Part 3: Running a process simulation

Simulating processes assists in identifying issues and potential improvements. You can create one or more simulation profiles for each process and then use the simulation editor to specify attributes of the profile, such as the quantity of available resources, and the number, rate, and composition of inputs to the process. You can also set specific conditions such as cumulative costs for the process.

__ 1. Create a simulation snapshot by right-clicking the **Credit Request** process in the **FMC Process Catalog** in the Project Tree and selecting **Simulate**.



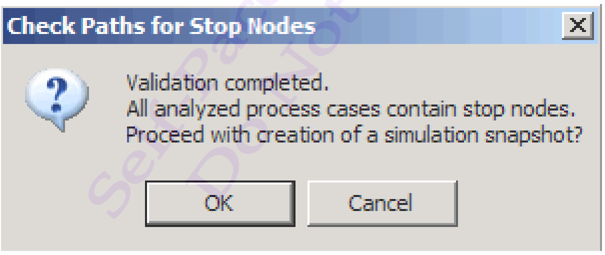
__ 2. Click **Yes** if the following window appears.



Paths without stop nodes will not simulate correctly.
Do you want to check for paths without stop nodes before creating a simulation snapshot?

☑ Always show this window

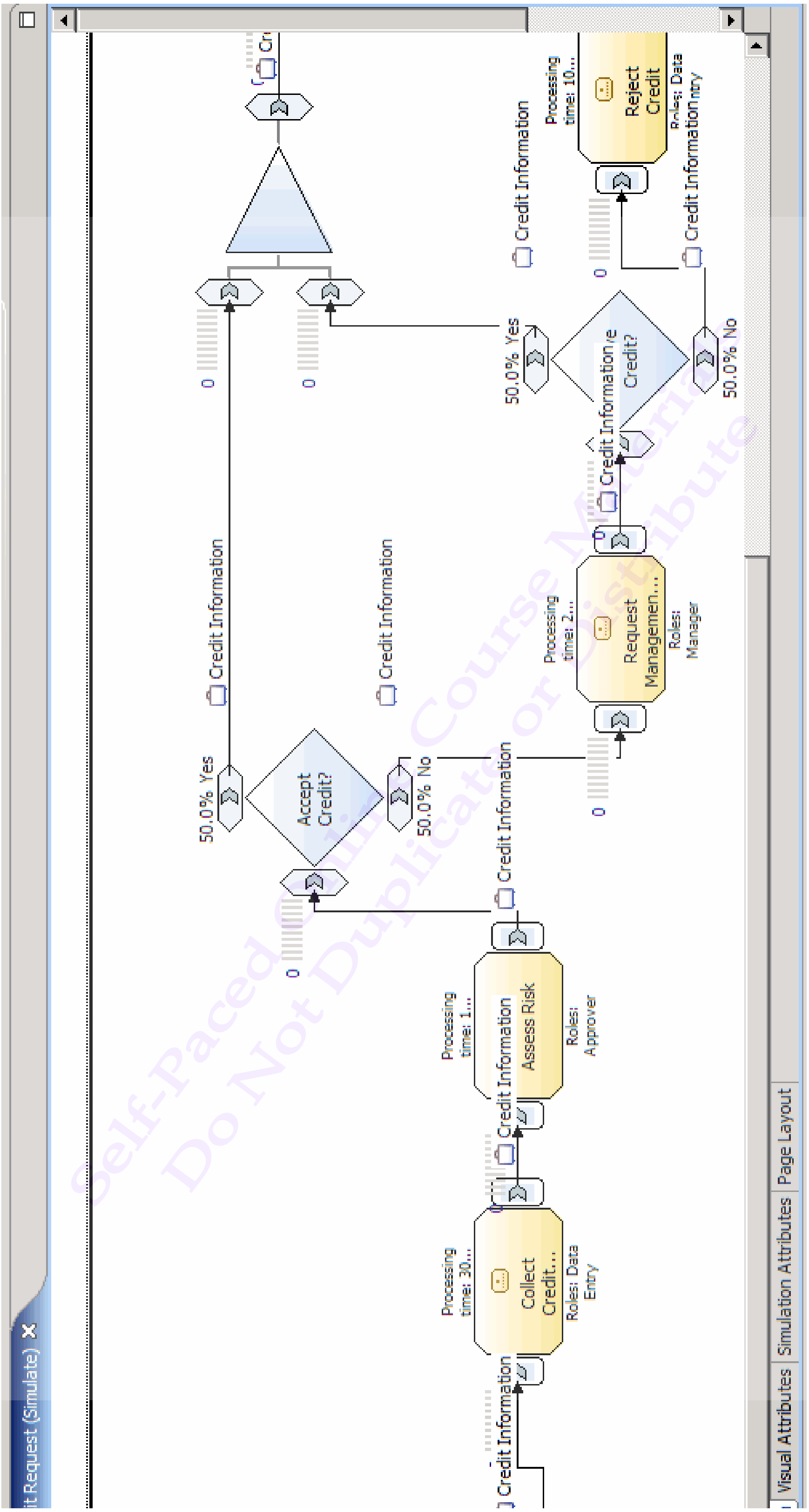
__ 3. Click **OK** if the following window appears.



Validation completed.
All analyzed process cases contain stop nodes.
Proceed with creation of a simulation snapshot?

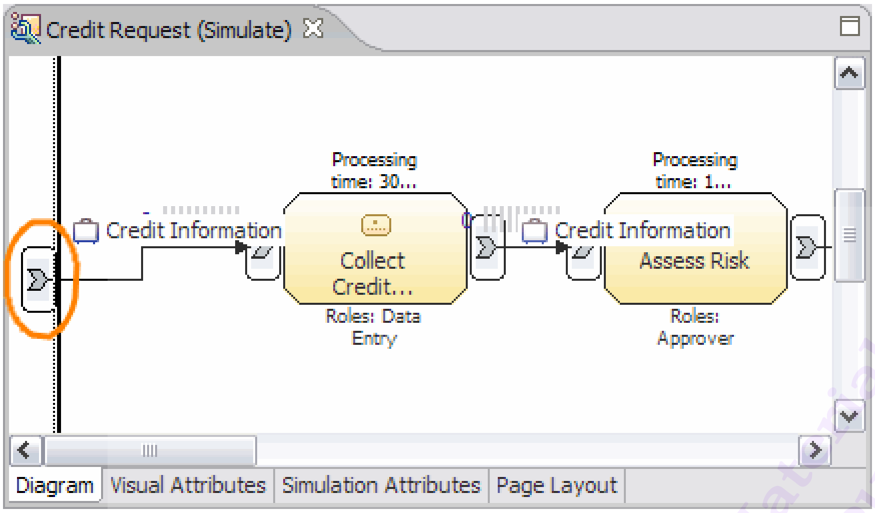
After the simulation snapshot has been created, a simulation editor opens.

__ 4. The simulator editor should appear as follows:



Self-Paced Course Material
Do Not Duplicate or Distribute

__ 5. Within the simulation editor, select the process input (see circle below).



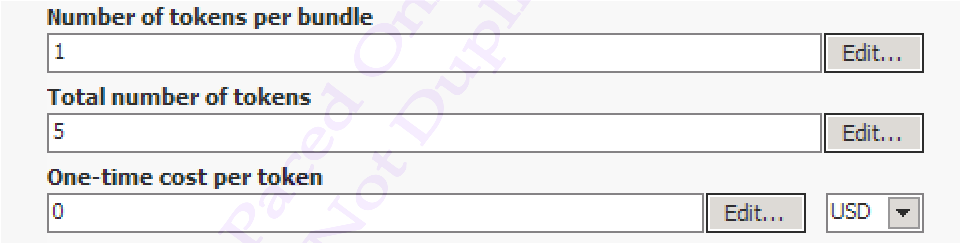
The **Attributes - Input** pane is displayed with Token Creation settings — you can specify settings here for inputs of a simulated process that determine the rate, quantity, start time, and costs of inputs.

__ 6. In the **Attributes** pane, click the **Edit** button next to **Total Number of tokens**.

__ 7. Under **Specific value**, enter `5` and click **OK**.

This will cause the process to simulate five requests for credit.

The Token creation settings should look as follows:

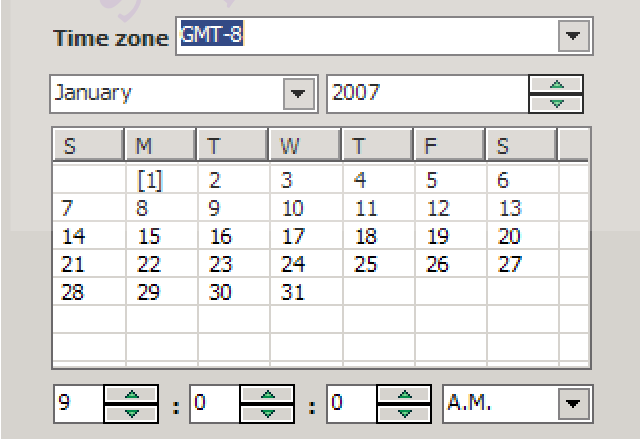


Number of tokens per bundle
1 Edit...

Total number of tokens
5 Edit...

One-time cost per token
0 Edit... USD

__ 8. Select **Time trigger**, and set the **Start Time** to `Monday, January 1, 2007 at 9:00:00 AM`.



Time zone GMT-8

January 2007

S	M	T	W	T	F	S
	[1]	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

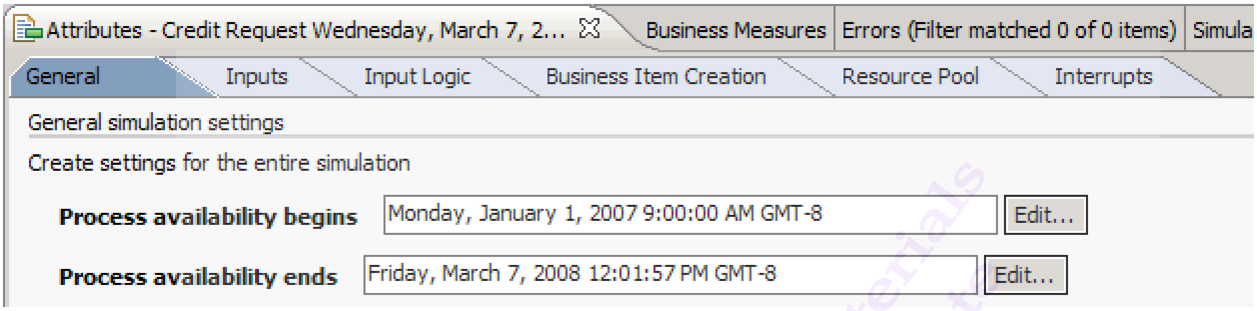
9 : 0 : 0 A.M.

__ 9. Click the background of the process diagram and review the **Attributes** pane for the simulation.

__ 10. In the **General** tab, click the **Edit** button next to **Process availability begins**.

__ 11. Select `Monday January 1st, 2007 at 9:00:00 AM` and click **OK**.

__ 12. The value for **Process availability ends** does not need to be modified.



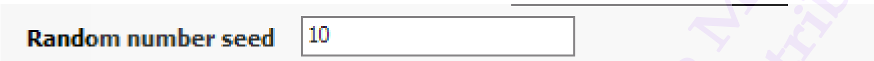
General simulation settings

Create settings for the entire simulation

Process availability begins Monday, January 1, 2007 9:00:00 AM GMT-8

Process availability ends Friday, March 7, 2008 12:01:57 PM GMT-8

__ 13. Scroll down to the **Random number seed** field and enter the value `10`.

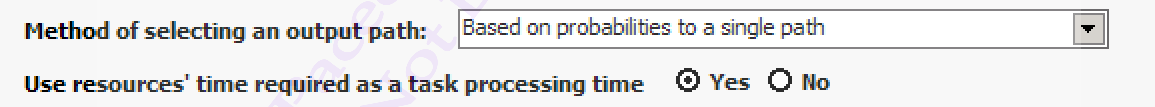


Random number seed 10

Setting a value of zero as the random number seed causes the system to generate its own random number seed. This in turn means that multiple runs of an identical profile may result in different simulated behavior because random decisions are made differently from run to run.

If you set any value other than zero, each simulation of an identical profile results in identical behavior. In other words, setting a random number seed other than zero makes it possible for you to exactly reproduce a simulation run.

__ 14. Scroll down to the bottom and, next to **Use resources' time required as a task processing time**, verify that the **Yes** option is selected.

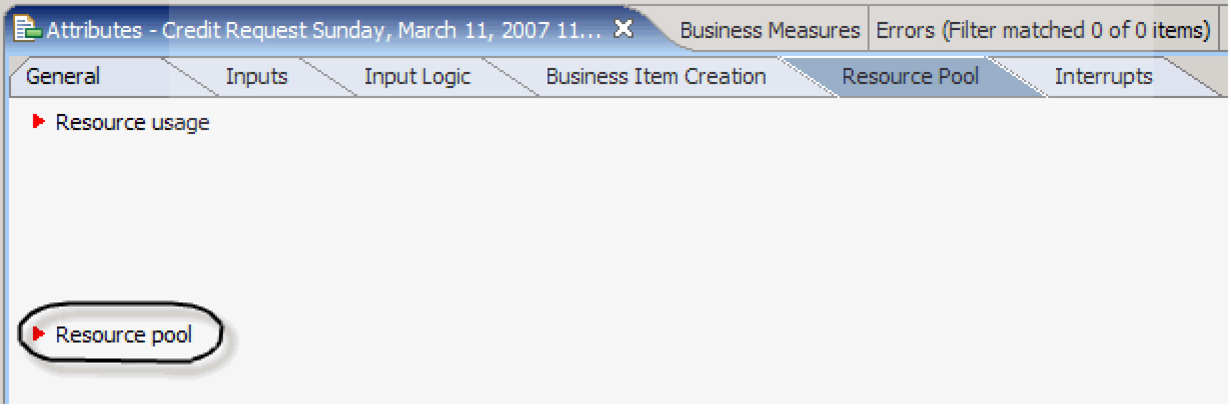


Method of selecting an output path: Based on probabilities to a single path

Use resources' time required as a task processing time ● Yes ○ No

__ 15. Select the **Resource Pool** tab.

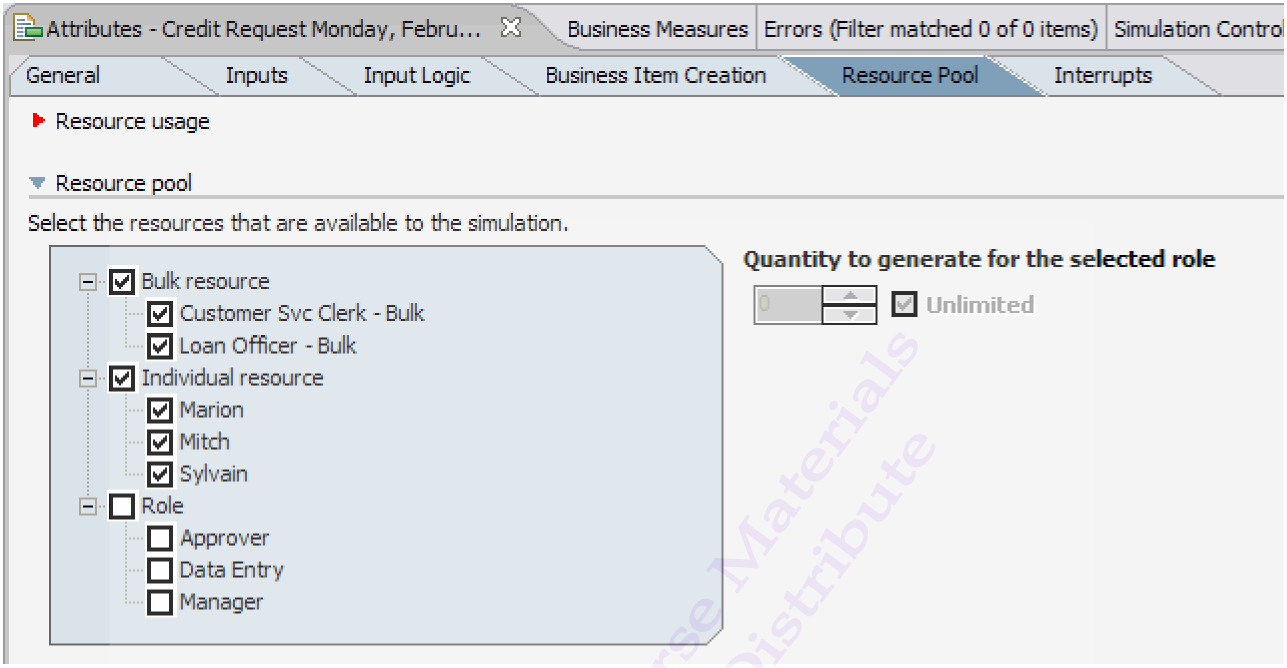
__ 16. Expand the **Resource Pool** section.


Attributes - Credit Request Sunday, March 11, 2007 11...
Business Measures
Errors (Filter matched 0 of 0 items)
General
Inputs
Input Logic
Business Item Creation
Resource Pool
Interrupts

▶ Resource usage

▶ Resource pool

__ 17. Under the **Resource pool** field, scroll down to **Role**, and clear the check box next to **Role** to remove the check boxes for the **Approver**, **Data Entry**, and **Manager** roles.



Select the resources that are available to the simulation.

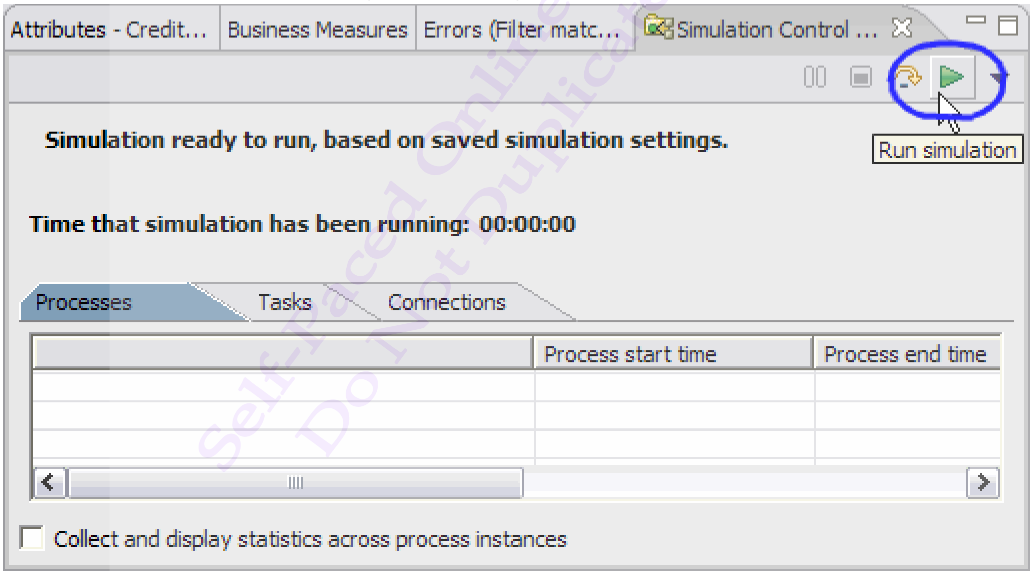
- ☑ Bulk resource
  - ☑ Customer Svc Clerk - Bulk
  - ☑ Loan Officer - Bulk
- ☑ Individual resource
  - ☑ Marion
  - ☑ Mitch
  - ☑ Sylvain
- ☐ Role
  - ☐ Approver
  - ☐ Data Entry
  - ☐ Manager

Quantity to generate for the selected role

0 ☑ Unlimited

__ 18. Save the simulation settings (Ctrl+S).

__ 19. Select the **Simulation Control Panel** tab and click the **Run** button at the top right corner of the view (see below).

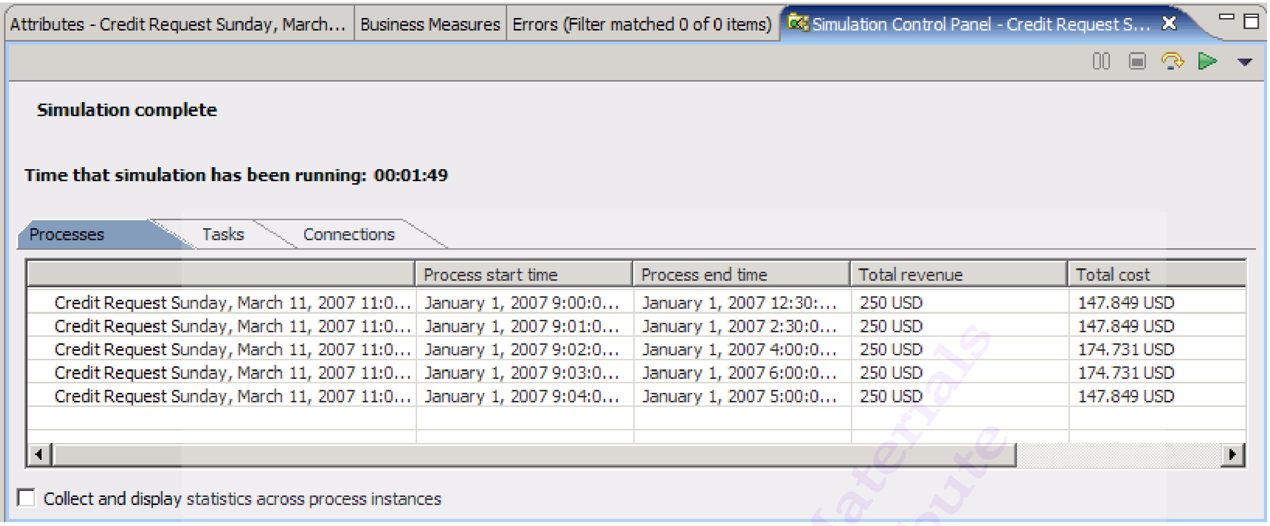


Simulation ready to run, based on saved simulation settings.

Time that simulation has been running: 00:00:00

☐ Collect and display statistics across process instances

During the simulation, you will see the **Credit Request** process in action, and each token (job) will flow through the process. The results are displayed upon completion of the simulation. You may need to resize the **Simulation Control Panel** in order to view more of the simulation results.


Attributes - Credit Request Sunday, March...
Business Measures
Errors (Filter matched 0 of 0 items)
Simulation Control Panel - Credit Request S...
Processes
Tasks
Connections

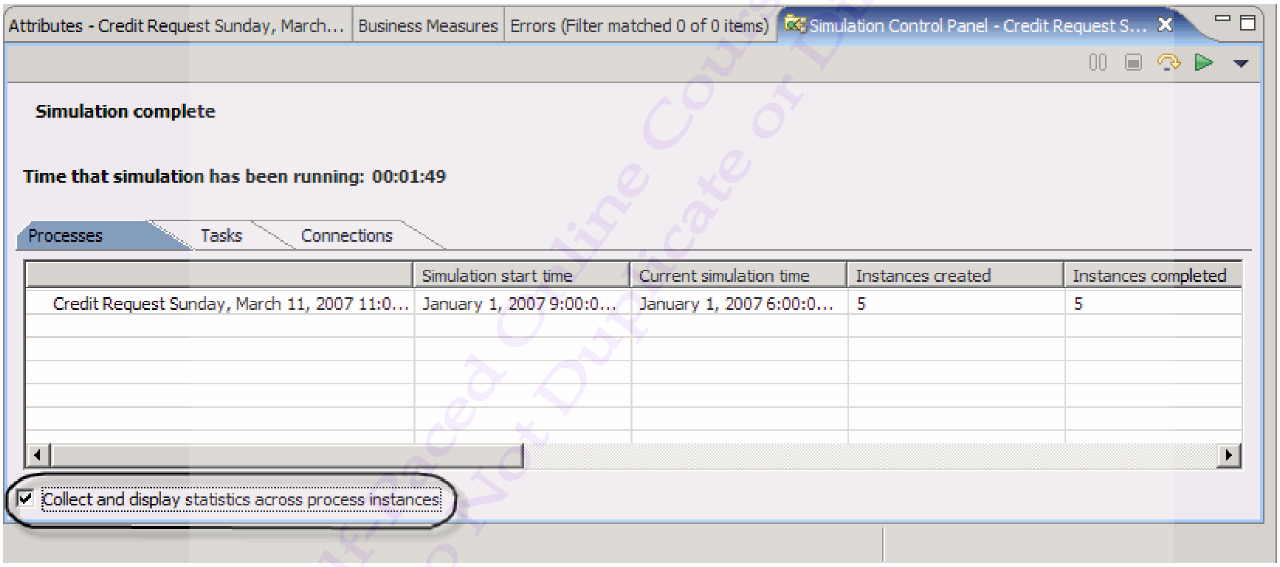
Simulation complete

Time that simulation has been running: 00:01:49

	Process start time	Process end time	Total revenue	Total cost
Credit Request Sunday, March 11, 2007 11:0...	January 1, 2007 9:00:0...	January 1, 2007 12:30:...	250 USD	147.849 USD
Credit Request Sunday, March 11, 2007 11:0...	January 1, 2007 9:01:0...	January 1, 2007 2:30:0...	250 USD	147.849 USD
Credit Request Sunday, March 11, 2007 11:0...	January 1, 2007 9:02:0...	January 1, 2007 4:00:0...	250 USD	174.731 USD
Credit Request Sunday, March 11, 2007 11:0...	January 1, 2007 9:03:0...	January 1, 2007 6:00:0...	250 USD	174.731 USD
Credit Request Sunday, March 11, 2007 11:0...	January 1, 2007 9:04:0...	January 1, 2007 5:00:0...	250 USD	147.849 USD

☐ Collect and display statistics across process instances

__ 20. Click the **Collect and display statistics across process instances** check box to view generated statistics as averages for all process instances.


Attributes - Credit Request Sunday, March...
Business Measures
Errors (Filter matched 0 of 0 items)
Simulation Control Panel - Credit Request S...
Processes
Tasks
Connections

Simulation complete

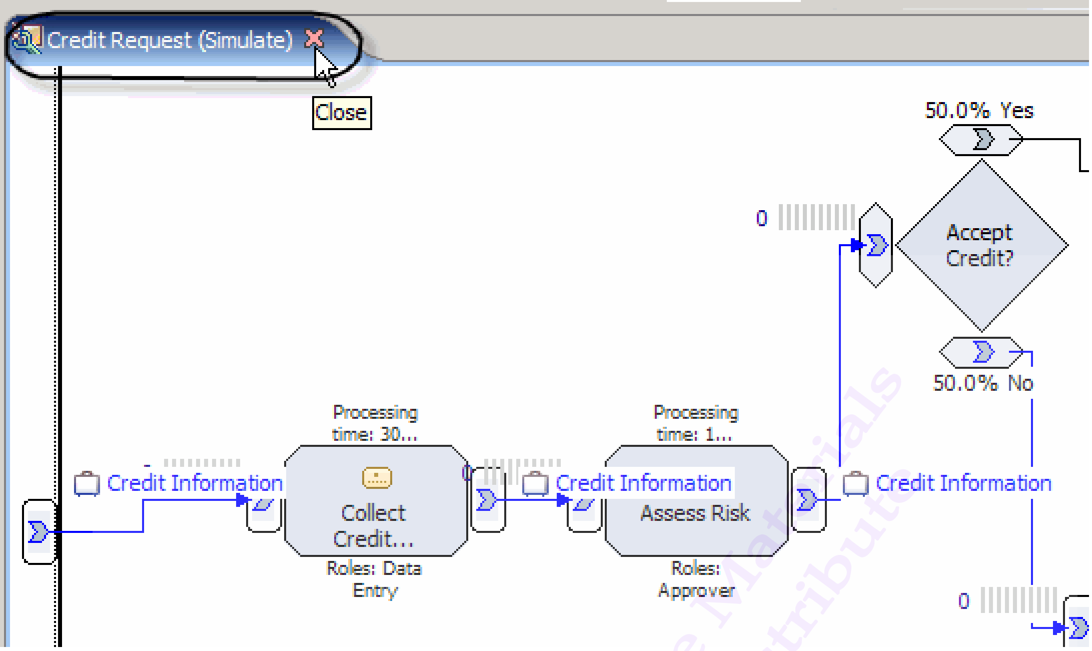
Time that simulation has been running: 00:01:49

	Simulation start time	Current simulation time	Instances created	Instances completed
Credit Request Sunday, March 11, 2007 11:0...	January 1, 2007 9:00:0...	January 1, 2007 6:00:0...	5	5

☑ Collect and display statistics across process instances

There were five instances created and five instances completed. In other words, there were five credit requests successfully passed though the simulation.

__ 21. Close the **Credit Request (Simulate)** editor.



Part 4: *Using global simulation settings*

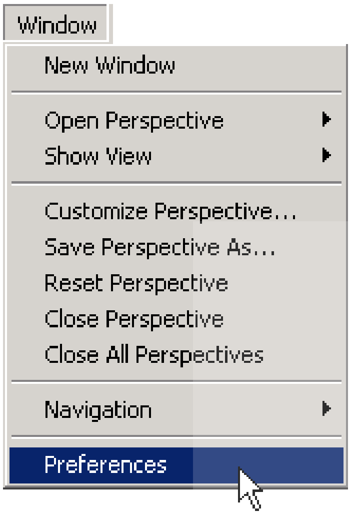
This lab walks you through the steps to prepare the simulation environment to use some of the more advanced features of WebSphere Business Modeler.

Simulating processes assists in identifying issues and potential improvements. You can create one or more simulation profiles for each process and then use the simulation editor to specify attributes of the profile, such as the quantity of available resources, number, rate and composition of inputs to the process. You can also set specific conditions such as cumulative costs for the process.

In this exercise, you set the global simulation attributes, which will save you time in the future as you create additional simulation profiles for this process.

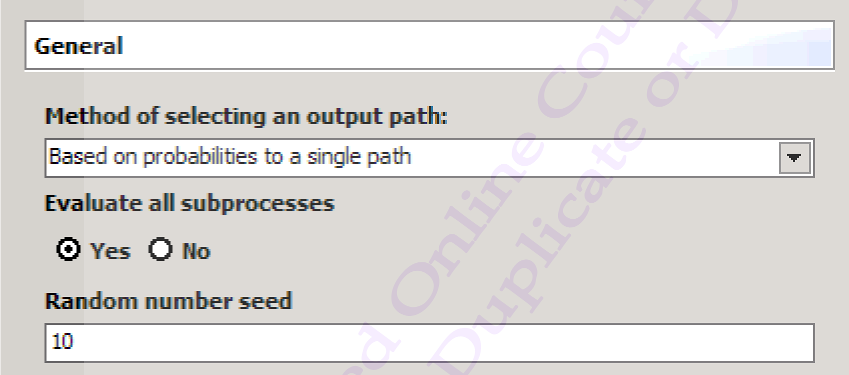
Since the simulation will be performed multiple times during this exercise, it is a good idea to set up the simulation global settings.

__ 1. In the menu bar of WebSphere Business Modeler, select **Window —> Preferences**. The **Preferences** window appears.



__ 2. In the navigation tree (left pane) of the **Preferences** window, select **Business Modeling —> Simulation —> General**.

__ 3. Under **General simulation settings**, enter `10` in the **Random number seed** field.



General

Method of selecting an output path: Based on probabilities to a single path

Evaluate all subprocesses

● Yes ○ No

Random number seed

10

__ 4. In the navigation tree, under **Business Modeling —> Simulation**, select **Token creation**.

The **Token creation settings** screen appears in the pane on the right side.

__ 5. Click the **Edit** button next to **Start time**.

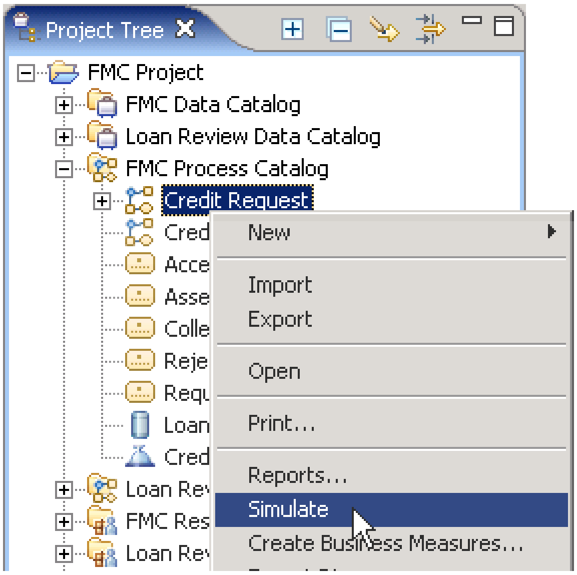
__ 6. Set the time to `Monday, January 1, 2007 9:00:00 AM.`

__ 7. Click **Apply**.

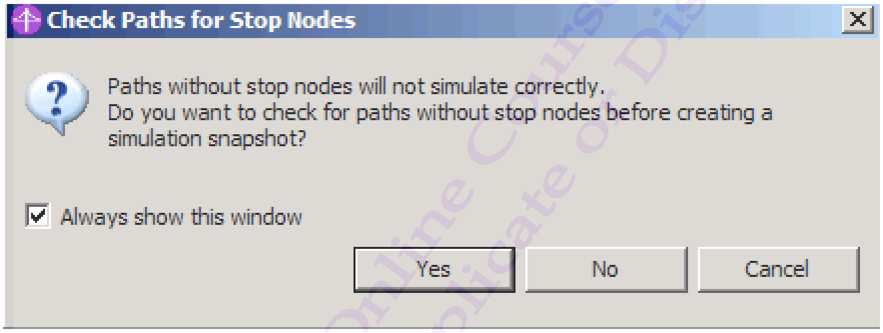
__ 8. Click **OK** to exit the **Preferences** window.

Part 5: Running a simulation with global simulation attributes

__ 1. From the Project Tree, right-click the **Credit Request** process and select **Simulate** from the context menu.



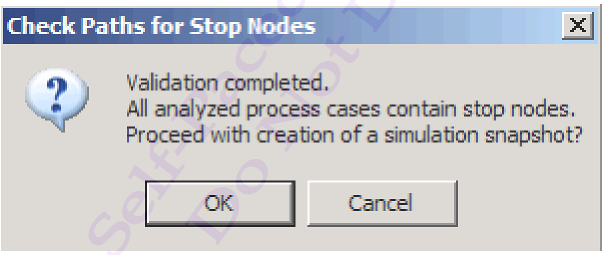
__ 2. Click **Yes** if the following window appears.



Paths without stop nodes will not simulate correctly.
Do you want to check for paths without stop nodes before creating a simulation snapshot?

☑ Always show this window

__ 3. Click **OK** if the following window appears.



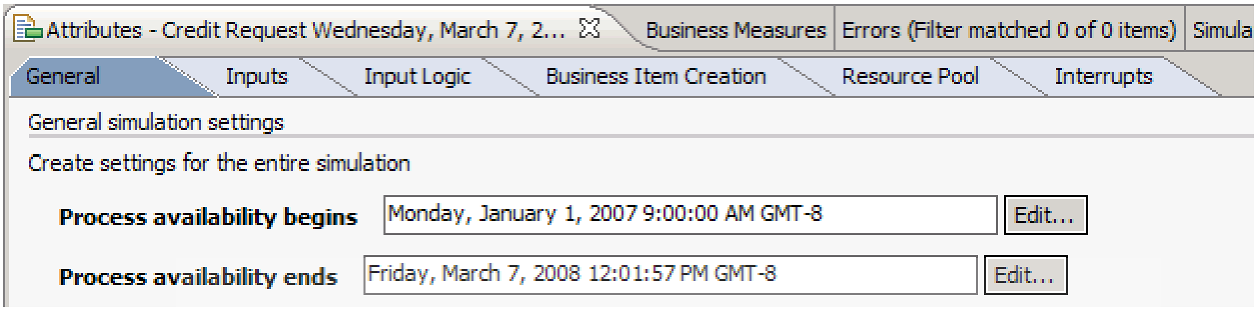
Validation completed.
All analyzed process cases contain stop nodes.
Proceed with creation of a simulation snapshot?

__ 4. Click the background of the process diagram and review the **Attributes** pane for the simulation.

__ 5. In the **General** tab, click the **Edit** button next to **Process availability begins**.

__ 6. Select `Monday January 1st, 2007 at 9:00:00 AM` and click **OK**.

__ 7. The value for **Process availability ends** does not need to be modified.



General simulation settings

Create settings for the entire simulation

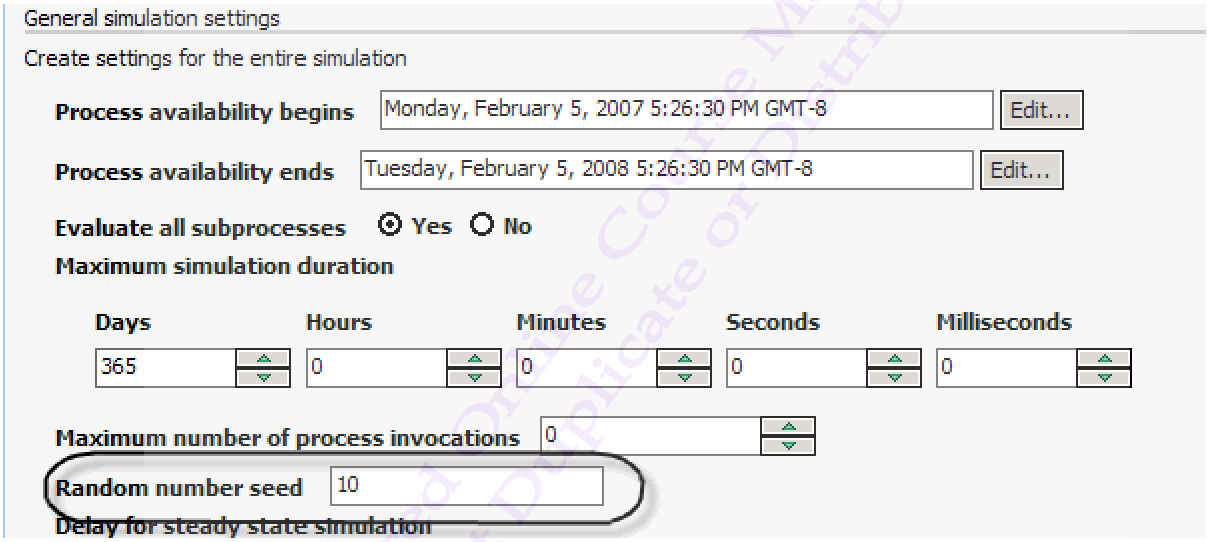
Process availability begins Monday, January 1, 2007 9:00:00 AM GMT-8

Process availability ends Friday, March 7, 2008 12:01:57 PM GMT-8

__ 8. In the **General** tab of the **Attributes** pane, click the **Edit** button next to **Process availability begins**.

__ 9. Set the value to `Monday, January 1, 2007 9:00:00 AM`.

__ 10. Verify that `10` is defined as the **Random number seed** as defined in the global preferences.



General simulation settings

Create settings for the entire simulation

Process availability begins Monday, February 5, 2007 5:26:30 PM GMT-8

Process availability ends Tuesday, February 5, 2008 5:26:30 PM GMT-8

Evaluate all subprocesses ● Yes ○ No

Maximum simulation duration

Days	Hours	Minutes	Seconds	Milliseconds
365	0	0	0	0

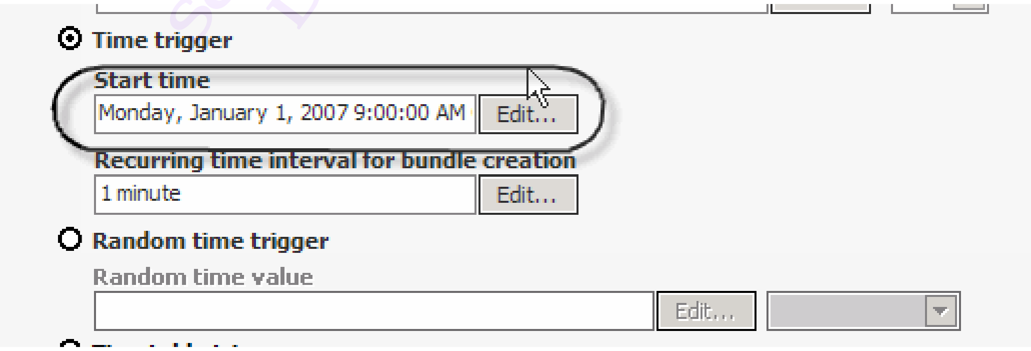
Maximum number of process invocations 0

Random number seed 10

Delay for steady state simulation

__ 11. Click the **Inputs** tab.

__ 12. Verify that the start time is **Monday, January 1, 2007 9:00:00 AM** as defined in the global preferences.



● **Time trigger**

Start time Monday, January 1, 2007 9:00:00 AM

Recurring time interval for bundle creation 1 minute

○ **Random time trigger**

Random time value

__ 13. Set the **Total number of tokens** to `200`.

a. Click **Edit** next to **Total number of tokens.**

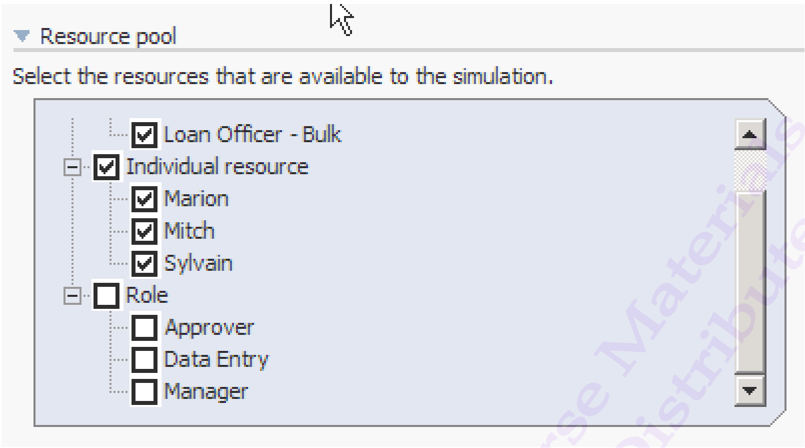
b. Enter `200` under **Specific value**.

c. Click **OK.**

__ 14. Select the **Resource Pool** tab.

__ 15. Click the **Resource pool** section, scroll up to **Role**, and clear the check box next to **Role**.

This clears the check boxes for the **Approver**, **Data Entry**, and **Manager** roles.



Resource pool

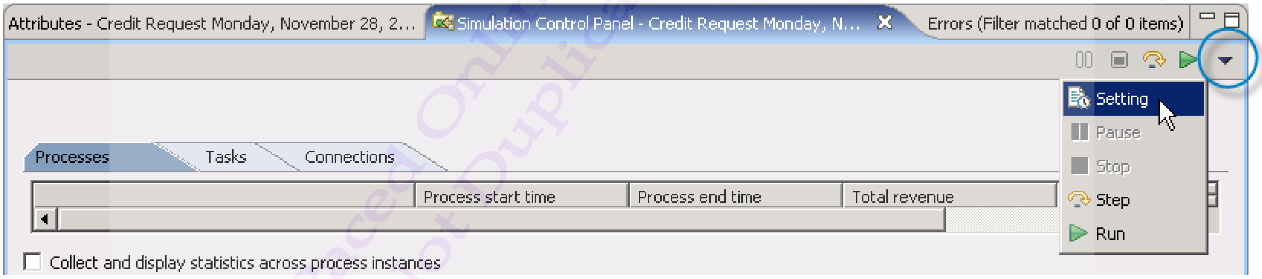
Select the resources that are available to the simulation.

- ☑ Loan Officer - Bulk
- ☑ Individual resource
  - ☑ Marion
  - ☑ Mitch
  - ☑ Sylvain
- ☐ Role
  - ☐ Approver
  - ☐ Data Entry
  - ☐ Manager

__ 16. Save the simulation settings (Ctrl+S).

__ 17. Select the **Simulation Control Panel** tab.

__ 18. Click the **Menu** icon in the upper right corner of the pane and select **Setting**.


Attributes - Credit Request Monday, November 28, 2...
Simulation Control Panel - Credit Request Monday, N...
Errors (Filter matched 0 of 0 items)
Setting
Pause
Stop
Step
Run
Processes
Tasks
Connections
Process start time
Process end time
Total revenue

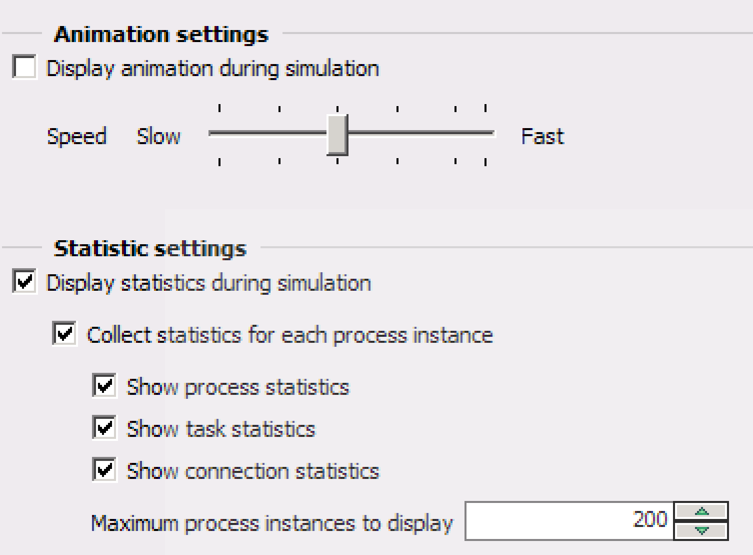
☐ Collect and display statistics across process instances

__ 19. In the **Simulation Settings** dialog box, clear the check box next to **Display animation during simulation**.

Removing on-screen animations allows for faster simulations.

__ 20. Change the value of **Maximum process instances to display** to `200`.

This will enable you to view simulation statistics for all 200 process instances in the Simulation Control Panel.



Animation settings

☐ Display animation during simulation

Speed Slow — Fast

Statistic settings

☑ Display statistics during simulation

☑ Collect statistics for each process instance

☑ Show process statistics

☑ Show task statistics

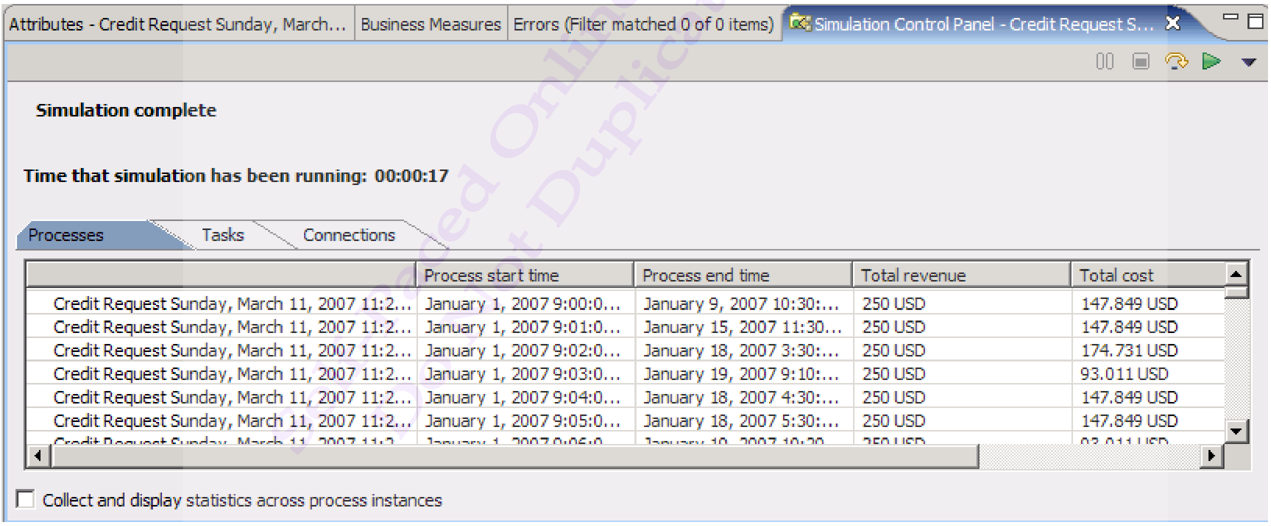
☑ Show connection statistics

Maximum process instances to display: 200

__ 21. Click **OK**.

__ 22. Click the **Run simulation** button at the top right corner of the **Simulation Control Panel**.

Since 200 tokens will be generated in this simulation, the simulation is supposed to take longer to complete; however, the animation was off, so it will run very quickly.



Attributes - Credit Request Sunday, March...
Business Measures
Errors (Filter matched 0 of 0 items)
Simulation Control Panel - Credit Request S...
Processes
Tasks
Connections

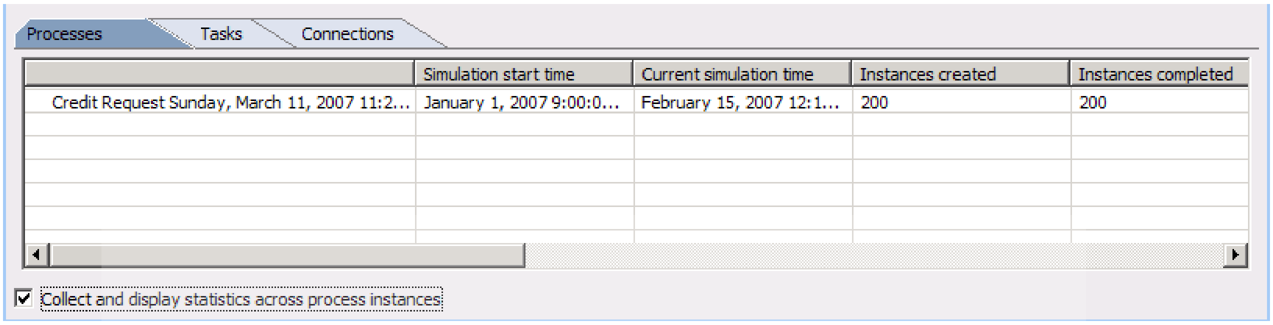
Simulation complete

Time that simulation has been running: 00:00:17

	Process start time	Process end time	Total revenue	Total cost
Credit Request Sunday, March 11, 2007 11:2...	January 1, 2007 9:00:0...	January 9, 2007 10:30:...	250 USD	147.849 USD
Credit Request Sunday, March 11, 2007 11:2...	January 1, 2007 9:01:0...	January 15, 2007 11:30...	250 USD	147.849 USD
Credit Request Sunday, March 11, 2007 11:2...	January 1, 2007 9:02:0...	January 18, 2007 3:30:...	250 USD	174.731 USD
Credit Request Sunday, March 11, 2007 11:2...	January 1, 2007 9:03:0...	January 19, 2007 9:10:...	250 USD	93.011 USD
Credit Request Sunday, March 11, 2007 11:2...	January 1, 2007 9:04:0...	January 18, 2007 4:30:...	250 USD	147.849 USD
Credit Request Sunday, March 11, 2007 11:2...	January 1, 2007 9:05:0...	January 18, 2007 5:30:...	250 USD	147.849 USD

☐ Collect and display statistics across process instances

__ 23. Click the **Collect and display statistics across process instances** check box to view generated statistics as averages for all process instances.



	Simulation start time	Current simulation time	Instances created	Instances completed
Credit Request Sunday, March 11, 2007 11:2...	January 1, 2007 9:00:0...	February 15, 2007 12:1...	200	200

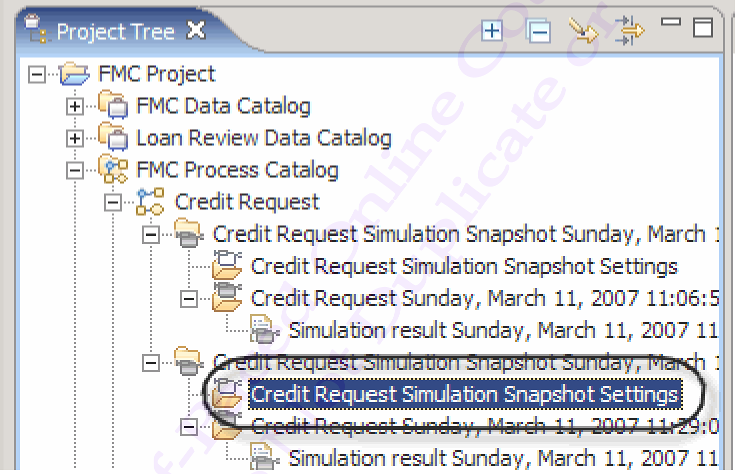
☑ Collect and display statistics across process instances

There were five instances created and five instances completed. In other words, there were five credit requests successfully passed though the simulation.

__ 24. Close the **Credit Request (Simulate)** editor.

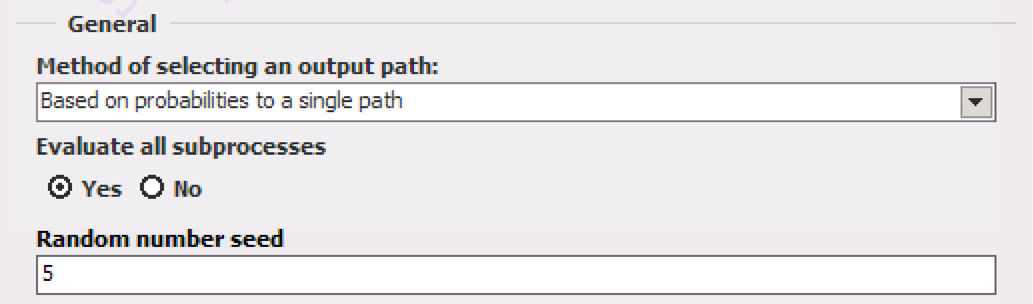
Part 6: Using local simulation attributes

__ 1. From the Project Tree, double-click **Credit Request Defaults** under the **Credit Request Simulation snapshot** you just created. **Simulation Local Preferences** appears on the right pane.



- FMC Project
  - FMC Data Catalog
  - Loan Review Data Catalog
  - FMC Process Catalog
    - Credit Request
      - Credit Request Simulation Snapshot Sunday, March 1
        - Credit Request Simulation Snapshot Settings
        - Credit Request Sunday, March 11, 2007 11:06:5
          - Simulation result Sunday, March 11, 2007 11
      - Credit Request Simulation Snapshot Sunday, March 1
        - Credit Request Simulation Snapshot Settings
        - Credit Request Sunday, March 11, 2007 11:29:0
          - Simulation result Sunday, March 11, 2007 11

__ 2. Set the **Random Number Seed** to 5.



General

Method of selecting an output path:
Based on probabilities to a single path

Evaluate all subprocesses
● Yes ○ No

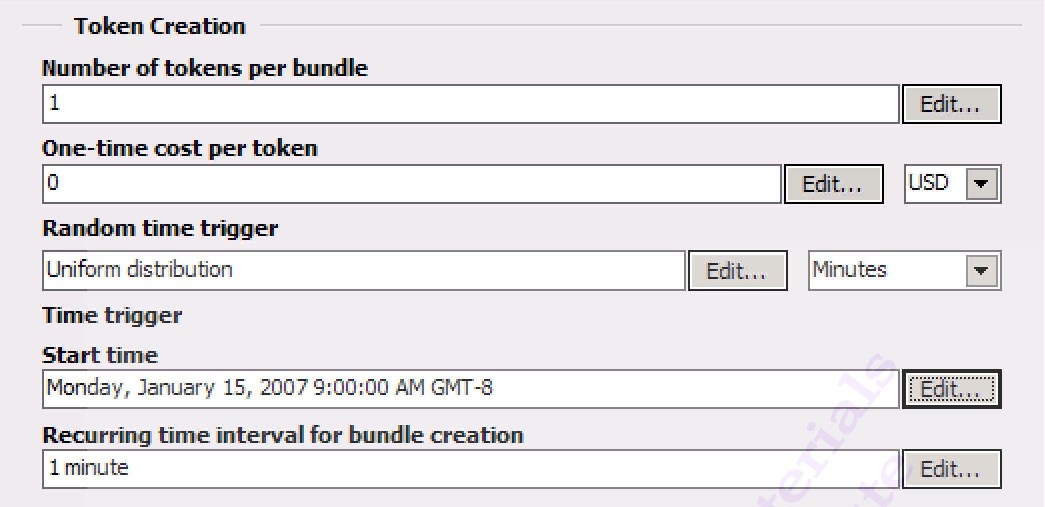
Random number seed
5

__ 3. Click **Token Creation** on the left to open **Token creation settings**.

__ 4. Click the **Edit** button next to **Start time**.

Self-Study Online Course Materials
Do Not Duplicate or Distribute

__ 5. Set the time to `Monday, January 15, 2007 8:00:00 AM` and click **OK**.



Token Creation

Number of tokens per bundle
1

One-time cost per token
0
USD

Random time trigger
Uniform distribution
Minutes

Time trigger

Start time
Monday, January 15, 2007 9:00:00 AM GMT-8

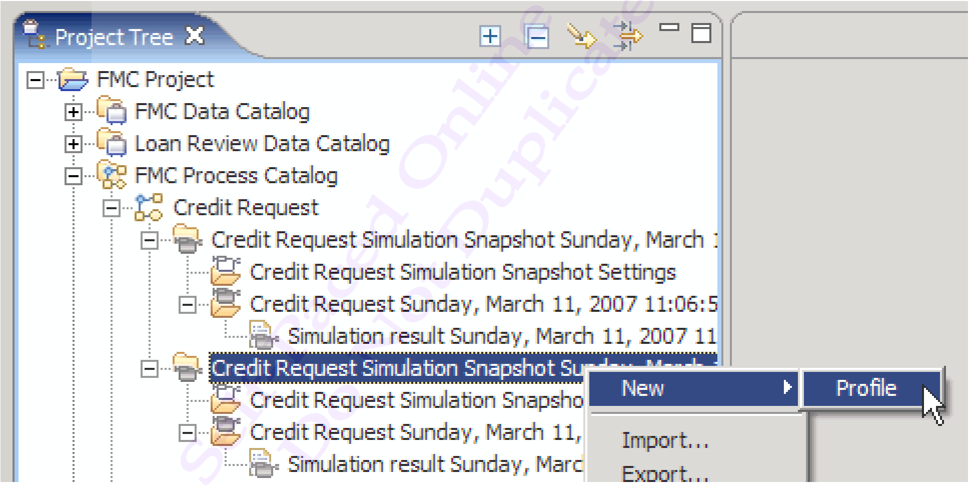
Recurring time interval for bundle creation
1 minute

__ 6. Save the simulation settings (Ctrl+S).

__ 7. Close the **Simulation Local Preferences editor** by clicking **X** on the tab.

Part 7: Running simulation with local simulation attributes

__ 1. From the Project Tree, right-click the **Credit Request Simulation snapshot** and select **New** —> **Profile**.



Project Tree

FMC Project
FMC Data Catalog
Loan Review Data Catalog
FMC Process Catalog
Credit Request
Credit Request Simulation Snapshot Sunday, March 1
Credit Request Simulation Snapshot Settings
Credit Request Sunday, March 11, 2007 11:06:5
Simulation result Sunday, March 11, 2007 11
Credit Request Simulation Snapshot Sunday, March
Credit Request Simulation Snapsho
Credit Request Sunday, March 11,
Simulation result Sunday, Marc

A new Credit Request simulation profile is created.

__ 2. In the **General tab** of the **Attributes** pane, click the **Edit** button next to **Process Availability begins**.

__ 3. Set the value to `Monday, January 1, 2007 9:00:00 AM`.

__ 4. Verify that `5` is defined as the **Random number seed** as defined in the local preferences.

__ 5. Click the **Inputs** tab.

Sponsored Online Course Materials
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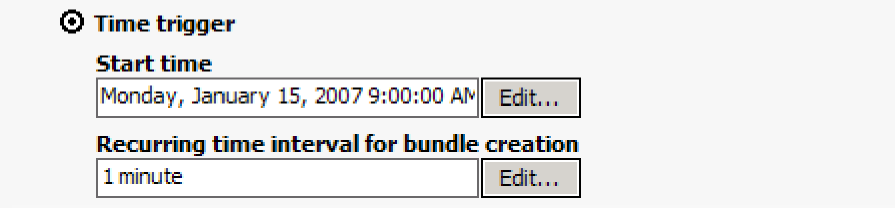
__ 6. Verify that the start time is **Monday, January 15, 2007 9:00:00 AM** as defined in the local preferences.



● **Time trigger**

Start time

Monday, January 15, 2007 9:00:00 AM

Recurring time interval for bundle creation

1 minute

Note

If you click the **Remove token creation settings** button, and then click **Add token creation settings**, this will refresh the token creation settings and synchronize the local settings with the preferences you specified earlier.

__ 7. Set the **Total number of tokens** for `100`.

   a. Click **Edit** next to **Total number of tokens.**

   b. Enter `100` under **Specific value**.

   c. Click **OK.**

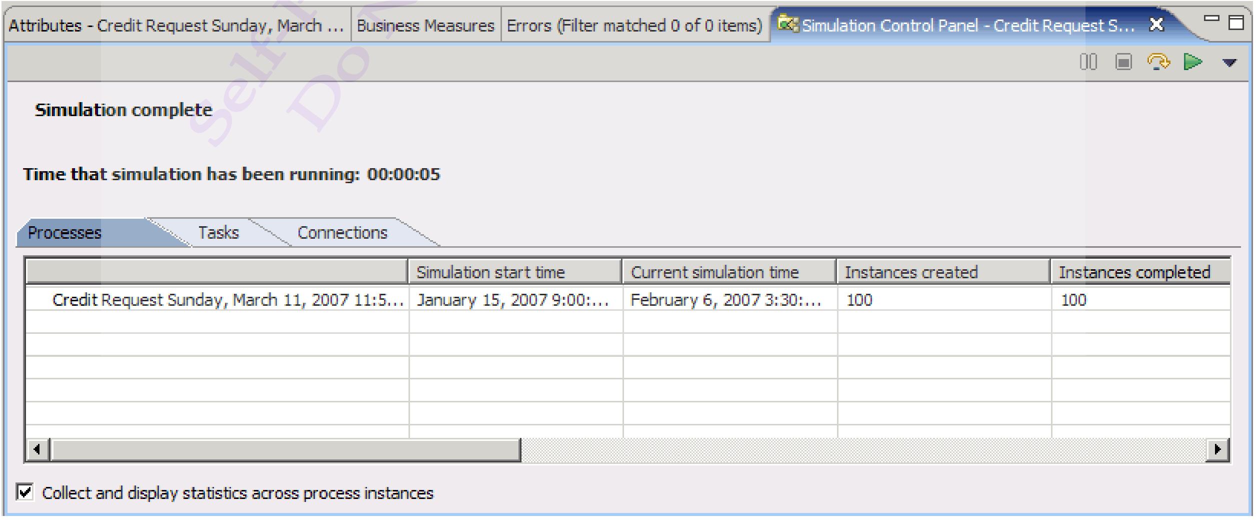
__ 8. Select the **Resource Pool** tab.

__ 9. Under the **Resource pool** field, scroll up to **Role**, clear the check box next to **Role**. This clears the check boxes for the **Approver**, **Data Entry**, and **Manager** roles.

__ 10. Save the simulation settings (Ctrl+S).

__ 11. Select the **Simulation Control Panel** tab and click the **Run simulation** button at the top right corner.

__ 12. Examine the simulation results.



Attributes - Credit Request Sunday, March ...
Business Measures
Errors (Filter matched 0 of 0 items)
Simulation Control Panel - Credit Request S...

Simulation complete

Time that simulation has been running: 00:00:05

Processes
Tasks
Connections

	Simulation start time	Current simulation time	Instances created	Instances completed
Credit Request Sunday, March 11, 2007 11:5...	January 15, 2007 9:00:...	February 6, 2007 3:30:...	100	100

☑ Collect and display statistics across process instances

There were 100 instances created and five instances completed. In other words, there were 100 credit requests successfully passed though the simulation.

__ 13. Save your work (Ctrl+S).

__ 14. Exit Modeler (**File** —> **Exit**).

You may play the flashcard game after completion of the lab exercise.

Part 8: Review questions

Your instructor will review the following questions with you.

__ 1. What is the difference between task duration and resource time requirements?

____

__ 2. What is the function of the resource pool during simulation?

____

__ 3. When do you want to use interrupt during simulation?

____

__ 4. How do you turn off the animation during simulation so that it runs faster?

____

END OF EXERCISE

Exercise 5. Dynamic analysis

What this exercise is about

This lab will provide hands-on experience in the simulation and analysis functionality in WebSphere Business Modeler.

What you should be able to do

At the end of the lab, you should be able to:

- Perform dynamic analysis
- Perform aggregated analysis
- Process case summary analysis
- Generate and export reports

Requirements

Previous labs should be completed successfully.

Exercise instructions

Part 1: Opening workspace

__ 1. To launch Modeler, click **Start —> Programs —> IBM WebSphere —> Business Modeler**.

__ 2. Browse to **C:\ClassWorkspaces\SimulationLab**.

__ 3. Click **OK**.

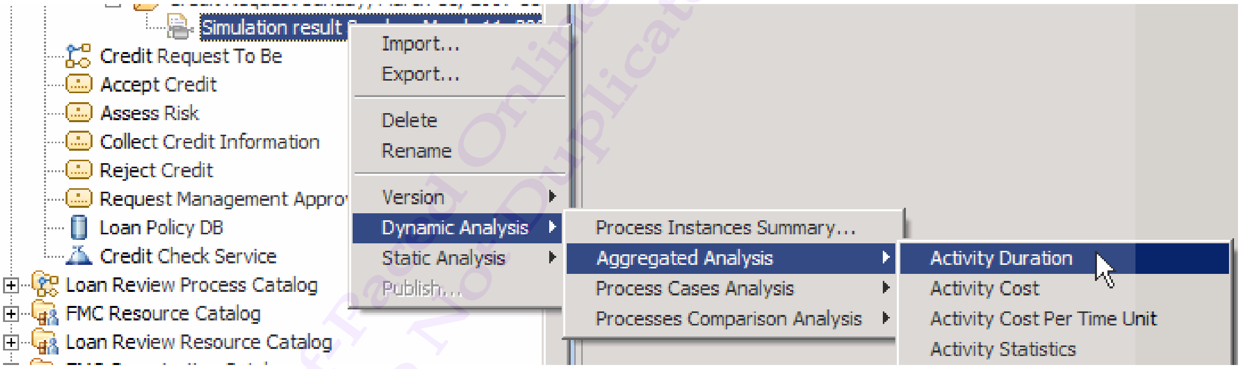
Part 2: Conducting dynamic analysis — aggregated analysis

You can analyze process simulation results to extract specific information on the monetary results, times, and statistic generated from running a simulation. From dynamic analysis, you can identify problems in the way the process currently works and you can compare the results that you produce when you simulate different variations of the same process.

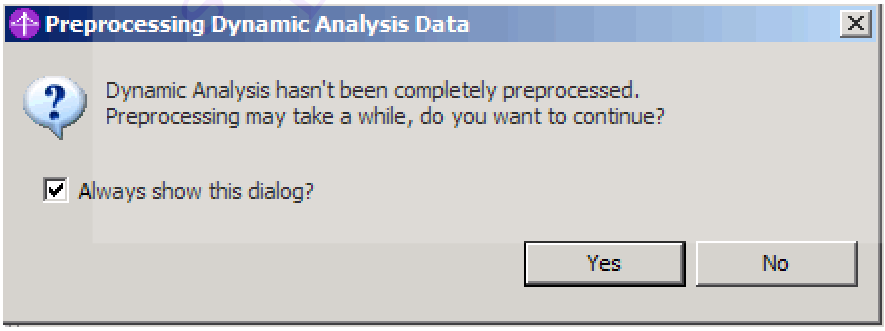
Aggregated analysis shows aggregate results for elements that have multiple instances or are executed multiple times in the simulation of a process, such as an activity or a resource.

__ 1. From the **Project Tree**, select and expand **Credit Request**.

__ 2. Right-click the last simulation results of **Credit Request** in the Project Tree and select **Dynamic Analysis —> Aggregated Analysis —> Activity Duration**.



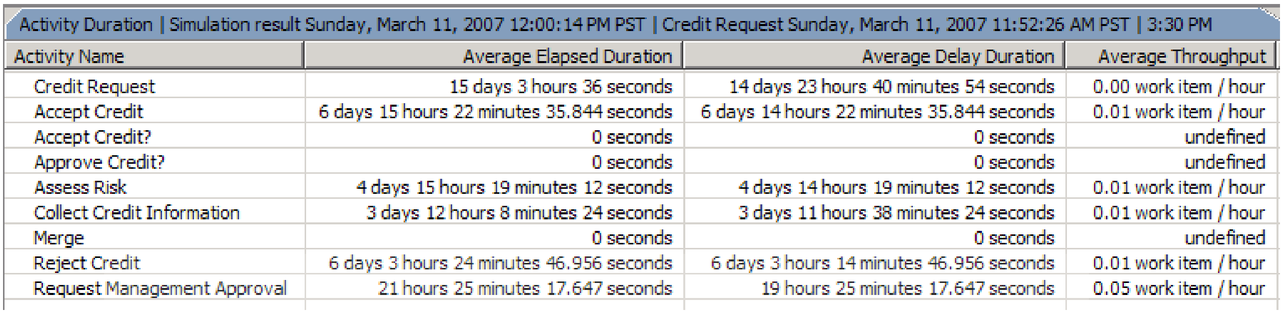
__ 3. Click **Yes** if the following window appears.


Preprocessing Dynamic Analysis Data

Dynamic Analysis hasn't been completely preprocessed.
Preprocessing may take a while, do you want to continue?

☑ Always show this dialog?

The analysis results are displayed:



Activity Duration | Simulation result Sunday, March 11, 2007 12:00:14 PM PST | Credit Request Sunday, March 11, 2007 11:52:26 AM PST | 3:30 PM

Activity Name	Average Elapsed Duration	Average Delay Duration	Average Throughput
Credit Request	15 days 3 hours 36 seconds	14 days 23 hours 40 minutes 54 seconds	0.00 work item / hour
Accept Credit	6 days 15 hours 22 minutes 35.844 seconds	6 days 14 hours 22 minutes 35.844 seconds	0.01 work item / hour
Accept Credit?	0 seconds	0 seconds	undefined
Approve Credit?	0 seconds	0 seconds	undefined
Assess Risk	4 days 15 hours 19 minutes 12 seconds	4 days 14 hours 19 minutes 12 seconds	0.01 work item / hour
Collect Credit Information	3 days 12 hours 8 minutes 24 seconds	3 days 11 hours 38 minutes 24 seconds	0.01 work item / hour
Merge	0 seconds	0 seconds	undefined
Reject Credit	6 days 3 hours 24 minutes 46.956 seconds	6 days 3 hours 14 minutes 46.956 seconds	0.01 work item / hour
Request Management Approval	21 hours 25 minutes 17.647 seconds	19 hours 25 minutes 17.647 seconds	0.05 work item / hour

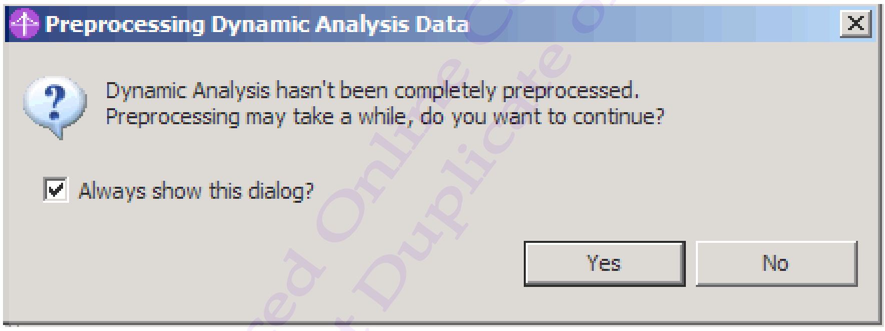
Activity duration analysis shows the average durations for all instances of each activity in the current simulation result.

You can use this analysis to determine which activities in a process require the longest durations to complete. After identifying these activities, you may then decide to streamline these activities, or to add more resources to reduce delay durations and elapsed durations.

__ 4. Right-click the results, and select **Close All.**

__ 5. Right-click the last simulation results of **Credit Request** in the Project Tree and select **Dynamic Analysis —> Aggregated Analysis —> Activity Cost**.

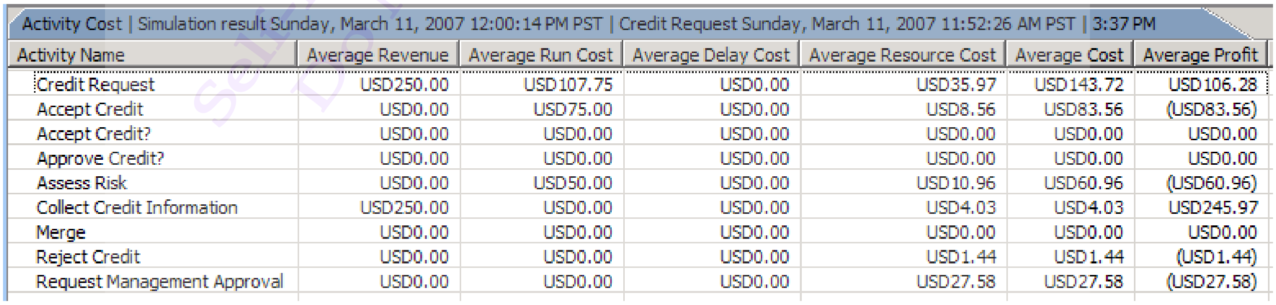
__ 6. Click **Yes** if the following window appears.



Dynamic Analysis hasn't been completely preprocessed.
Preprocessing may take a while, do you want to continue?

☑ Always show this dialog?

The analysis results are displayed:



Activity Cost | Simulation result Sunday, March 11, 2007 12:00:14 PM PST | Credit Request Sunday, March 11, 2007 11:52:26 AM PST | 3:37 PM

Activity Name	Average Revenue	Average Run Cost	Average Delay Cost	Average Resource Cost	Average Cost	Average Profit
Credit Request	USD250.00	USD107.75	USD0.00	USD35.97	USD143.72	USD106.28
Accept Credit	USD0.00	USD75.00	USD0.00	USD8.56	USD83.56	(USD83.56)
Accept Credit?	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Approve Credit?	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Assess Risk	USD0.00	USD50.00	USD0.00	USD10.96	USD60.96	(USD60.96)
Collect Credit Information	USD250.00	USD0.00	USD0.00	USD4.03	USD4.03	USD245.97
Merge	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Reject Credit	USD0.00	USD0.00	USD0.00	USD1.44	USD1.44	(USD1.44)
Request Management Approval	USD0.00	USD0.00	USD0.00	USD27.58	USD27.58	(USD27.58)

Activity cost analysis shows the average cost and revenue for all instances of each activity in the current simulation result.

This analysis enables you to quickly determine where in a process the most money is spent or earned. You can also determine the relative importance of expenses that result from the inherent cost of completing each activity, from resource costs, or from idle time while waiting for resources to become available. By understanding where costs and revenues are generated throughout the process, you can identify potential areas for improving revenues or reducing costs.

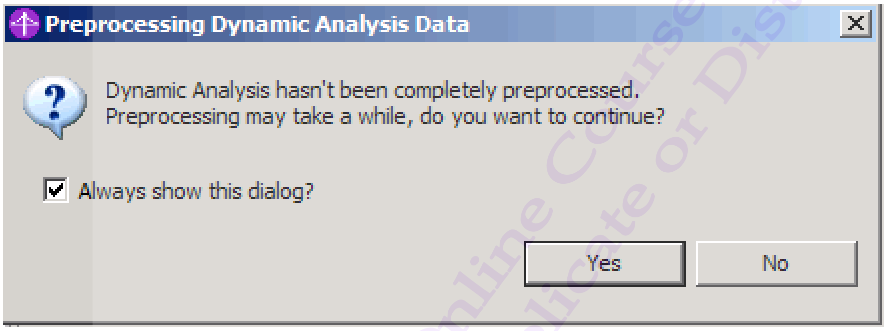
Note

The cost and revenue values displayed for subprocesses in this analysis are based on thieves specified for subprocesses as a whole, and do not reflect any costs and revenues generated by activities within subprocesses.

__ 7. Right-click the results, and select **Close All.**

__ 8. Right-click the last simulation results of **Credit Request** in the Project Tree and select **Dynamic Analysis —> Aggregated Analysis —> Activity Cost Per Time Unit**.

__ 9. Click **Yes** if the following window appears.

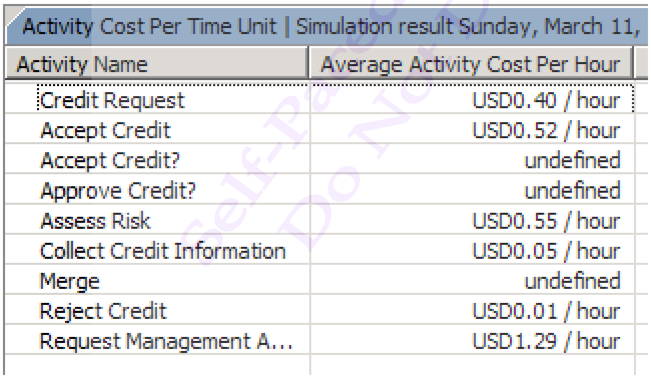


Preprocessing Dynamic Analysis Data

Dynamic Analysis hasn't been completely preprocessed.
Preprocessing may take a while, do you want to continue?

☑ Always show this dialog?

The analysis results are displayed:



Activity Cost Per Time Unit | Simulation result Sunday, March 11,

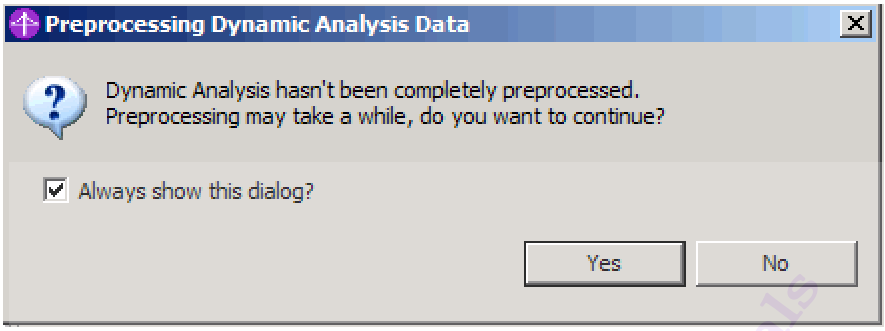
Activity Name	Average Activity Cost Per Hour
Credit Request	USD0.40 / hour
Accept Credit	USD0.52 / hour
Accept Credit?	undefined
Approve Credit?	undefined
Assess Risk	USD0.55 / hour
Collect Credit Information	USD0.05 / hour
Merge	undefined
Reject Credit	USD0.01 / hour
Request Management A...	USD1.29 / hour

The **Activity Cost Per Time Unit** analysis computes the costs per hour for each activity in a simulated process.

__ 10. Right-click the results, and select **Close All.**

__ 11. Right-click the last simulation results of **Credit Request** in the Project Tree and select **Dynamic Analysis —> Aggregated Analysis —> Activity Statistic**.

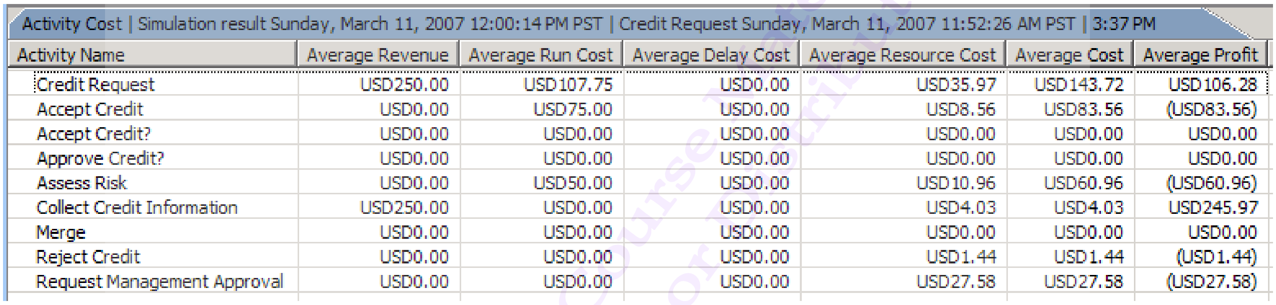
__ 12. Click **Yes** if the following window appears.



Dynamic Analysis hasn't been completely preprocessed.
Preprocessing may take a while, do you want to continue?

☑ Always show this dialog?

The analysis results are displayed:


Activity Cost | Simulation result Sunday, March 11, 2007 12:00:14 PM PST | Credit Request Sunday, March 11, 2007 11:52:26 AM PST | 3:37 PM

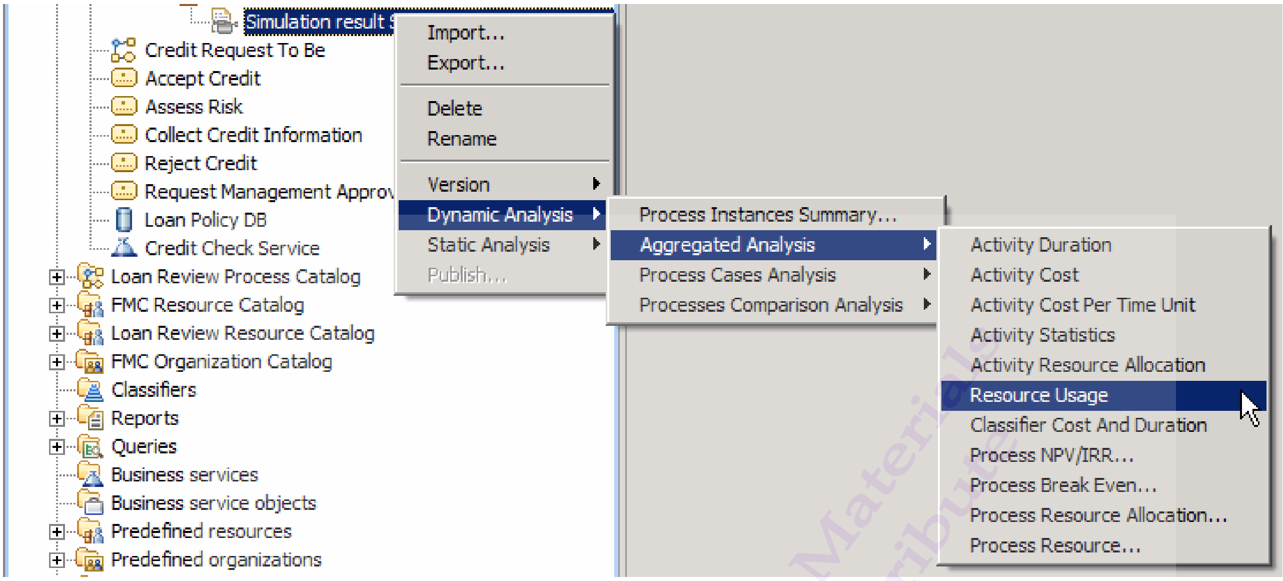
Activity Name	Average Revenue	Average Run Cost	Average Delay Cost	Average Resource Cost	Average Cost	Average Profit
Credit Request	USD250.00	USD107.75	USD0.00	USD35.97	USD143.72	USD106.28
Accept Credit	USD0.00	USD75.00	USD0.00	USD8.56	USD83.56	(USD83.56)
Accept Credit?	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Approve Credit?	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Assess Risk	USD0.00	USD50.00	USD0.00	USD10.96	USD60.96	(USD60.96)
Collect Credit Information	USD250.00	USD0.00	USD0.00	USD4.03	USD4.03	USD245.97
Merge	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Reject Credit	USD0.00	USD0.00	USD0.00	USD1.44	USD1.44	(USD1.44)
Request Management Approval	USD0.00	USD0.00	USD0.00	USD27.58	USD27.58	(USD27.58)

Activity statistics analysis shows the statistics generated by all instances of each activity across all process instances in the current simulation result.

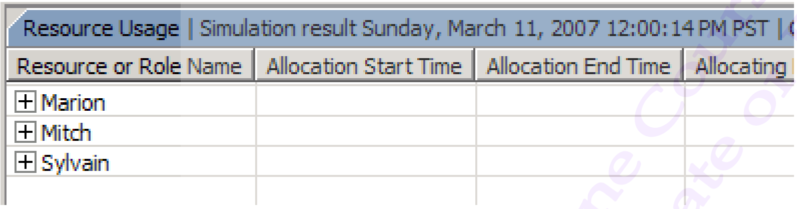
You can use this analysis when you run high volume simulations to determine the overall success or failure of the process and its activities. By understanding which activities had highest number of failures or the greatest rate of failure, you can decide where to focus your efforts to improve the process. You may determine, for example, that more resources need to be made available to enable more of a certain activity to succeed, or that the process flow should be changed so that activities are performed in sequence rather than in parallel paths.

__ 13. Right-click the results, and select **Close All.**

__ 14. Right-click the simulation results in the Project Tree and select **Dynamic Analysis —> Aggregated Analysis —> Resource Usage**.



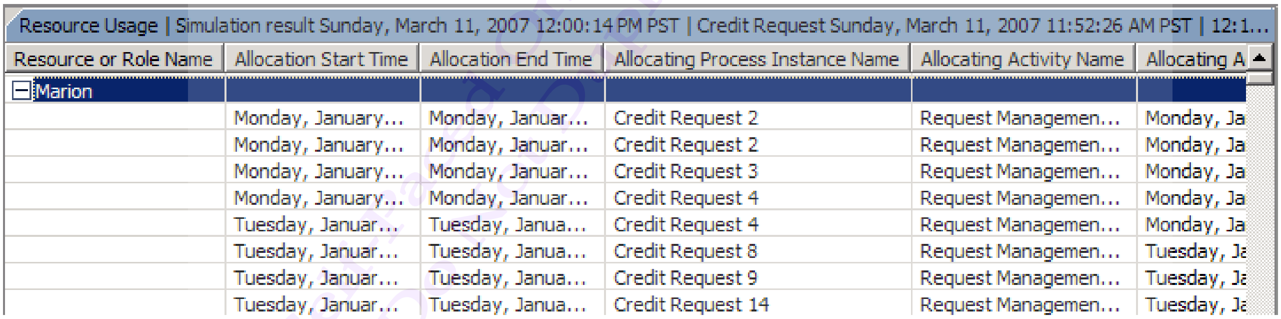
The analysis results are displayed:



Resource Usage | Simulation result Sunday, March 11, 2007 12:00:14 PM PST |

Resource or Role Name	Allocation Start Time	Allocation End Time	Allocating
⊞ Marion			
⊞ Mitch			
⊞ Sylvain			

__ 15. To examine the details, right-click the results, and select **Expand All**.



Resource Usage | Simulation result Sunday, March 11, 2007 12:00:14 PM PST | Credit Request Sunday, March 11, 2007 11:52:26 AM PST | 12:1...

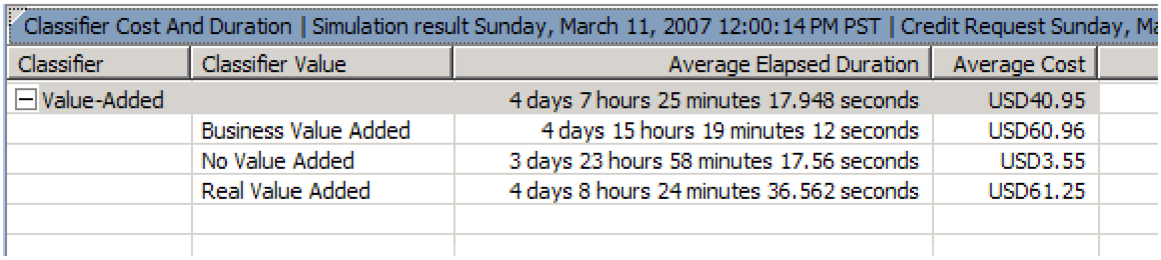
Resource or Role Name	Allocation Start Time	Allocation End Time	Allocating Process Instance Name	Allocating Activity Name	Allocating A
⊟ Marion					
	Monday, January...	Monday, Januar...	Credit Request 2	Request Managemen...	Monday, Ja
	Monday, January...	Monday, Januar...	Credit Request 2	Request Managemen...	Monday, Ja
	Monday, January...	Monday, Januar...	Credit Request 3	Request Managemen...	Monday, Ja
	Monday, January...	Monday, Januar...	Credit Request 4	Request Managemen...	Monday, Ja
	Tuesday, Januar...	Tuesday, Janua...	Credit Request 4	Request Managemen...	Monday, Ja
	Tuesday, Januar...	Tuesday, Janua...	Credit Request 8	Request Managemen...	Tuesday, Ja
	Tuesday, Januar...	Tuesday, Janua...	Credit Request 9	Request Managemen...	Tuesday, Ja
	Tuesday, Januar...	Tuesday, Janua...	Credit Request 14	Request Managemen...	Tuesday, Ja

The **Resource Usage** analysis shows information on usage of each resource that is allocated in a process simulation.

__ 16. Right-click the results, and select **Close All.**

__ 17. Right-click the simulation results in the Project Tree and select **Dynamic Analysis —> Aggregated Analysis —> Classifier Cost And Duration**.

The analysis results are displayed:



Classifier Cost And Duration | Simulation result Sunday, March 11, 2007 12:00:14 PM PST | Credit Request Sunday, Ma

Classifier	Classifier Value	Average Elapsed Duration	Average Cost
⊟ Value-Added		4 days 7 hours 25 minutes 17.948 seconds	USD40.95
	Business Value Added	4 days 15 hours 19 minutes 12 seconds	USD60.96
	No Value Added	3 days 23 hours 58 minutes 17.56 seconds	USD3.55
	Real Value Added	4 days 8 hours 24 minutes 36.562 seconds	USD61.25

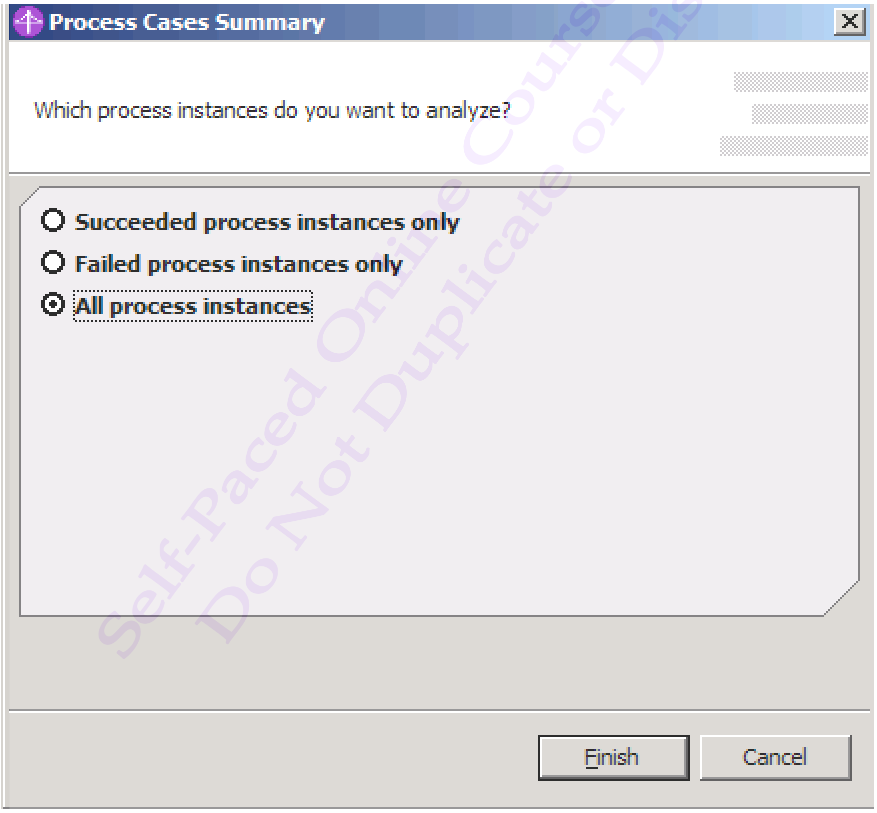
Classifier costs and durations analysis shows the costs and durations of activities associated with each classifier value used in a process.

__ 18. Right-click the results, and select **Close All.**

Part 3: Conducting dynamic analysis — process analysis

__ 1. Right-click the simulation results in the Project Tree and select **Dynamic Analysis —> Process Cases Analysis —> Process Cases Summary**.

__ 2. Select **All process instances** and click **Finish**.



Process Cases Summary

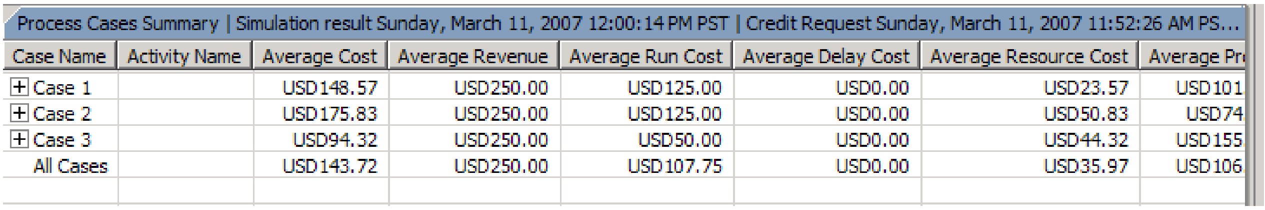
Which process instances do you want to analyze?

○ Succeeded process instances only

○ Failed process instances only

● All process instances

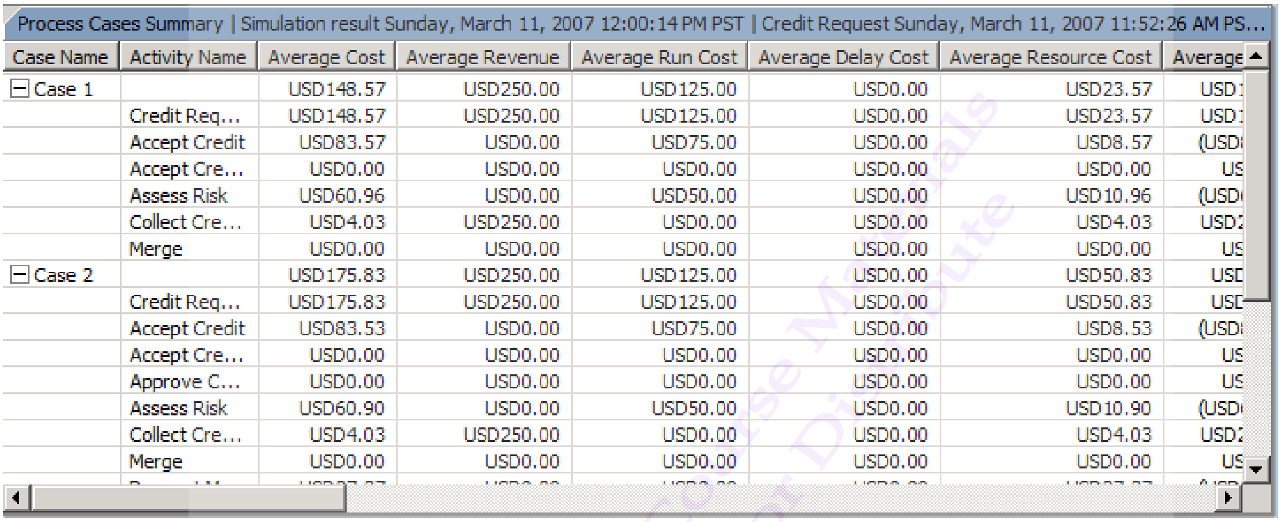
The analysis results are displayed:



Process Cases Summary | Simulation result Sunday, March 11, 2007 12:00:14 PM PST | Credit Request Sunday, March 11, 2007 11:52:26 AM PS...

Case Name	Activity Name	Average Cost	Average Revenue	Average Run Cost	Average Delay Cost	Average Resource Cost	Average Pr
⊞ Case 1		USD148.57	USD250.00	USD125.00	USD0.00	USD23.57	USD101
⊞ Case 2		USD175.83	USD250.00	USD125.00	USD0.00	USD50.83	USD74
⊞ Case 3		USD94.32	USD250.00	USD50.00	USD0.00	USD44.32	USD155
All Cases		USD143.72	USD250.00	USD107.75	USD0.00	USD35.97	USD106

__ 3. To examine the details, right-click the results, and select **Expand All**.



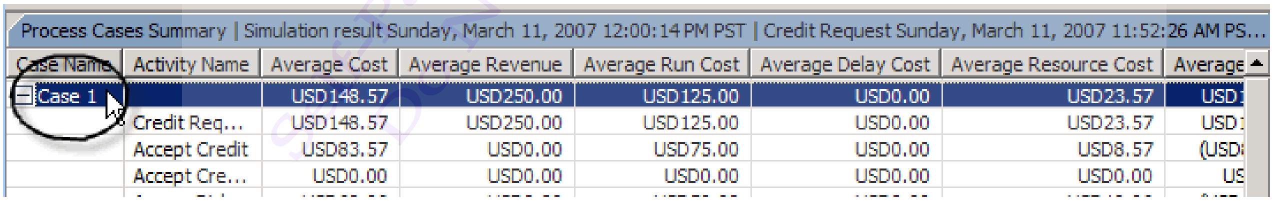
Process Cases Summary | Simulation result Sunday, March 11, 2007 12:00:14 PM PST | Credit Request Sunday, March 11, 2007 11:52:26 AM PS...

Case Name	Activity Name	Average Cost	Average Revenue	Average Run Cost	Average Delay Cost	Average Resource Cost	Average
⊟ Case 1		USD148.57	USD250.00	USD125.00	USD0.00	USD23.57	USD
	Credit Req...	USD148.57	USD250.00	USD125.00	USD0.00	USD23.57	USD
	Accept Credit	USD83.57	USD0.00	USD75.00	USD0.00	USD8.57	(USD
	Accept Cre...	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	US
	Assess Risk	USD60.96	USD0.00	USD50.00	USD0.00	USD10.96	(USD
	Collect Cre...	USD4.03	USD250.00	USD0.00	USD0.00	USD4.03	USD
	Merge	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	US
⊟ Case 2		USD175.83	USD250.00	USD125.00	USD0.00	USD50.83	USD
	Credit Req...	USD175.83	USD250.00	USD125.00	USD0.00	USD50.83	USD
	Accept Credit	USD83.53	USD0.00	USD75.00	USD0.00	USD8.53	(USD
	Accept Cre...	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	US
	Approve C...	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	US
	Assess Risk	USD60.90	USD0.00	USD50.00	USD0.00	USD10.90	(USD
	Collect Cre...	USD4.03	USD250.00	USD0.00	USD0.00	USD4.03	USD
	Merge	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	US

The **Process Cases Summary** analysis displays information about all process instances created during a simulation.

Processes that contain branches and decisions have multiple possible execution paths, also known as cases. This analysis lists the cases for a simulated process, and for each case shows the percentage of all process instances that match the path defined by that case. This analysis also lists process instances created in the simulation, grouped by case.

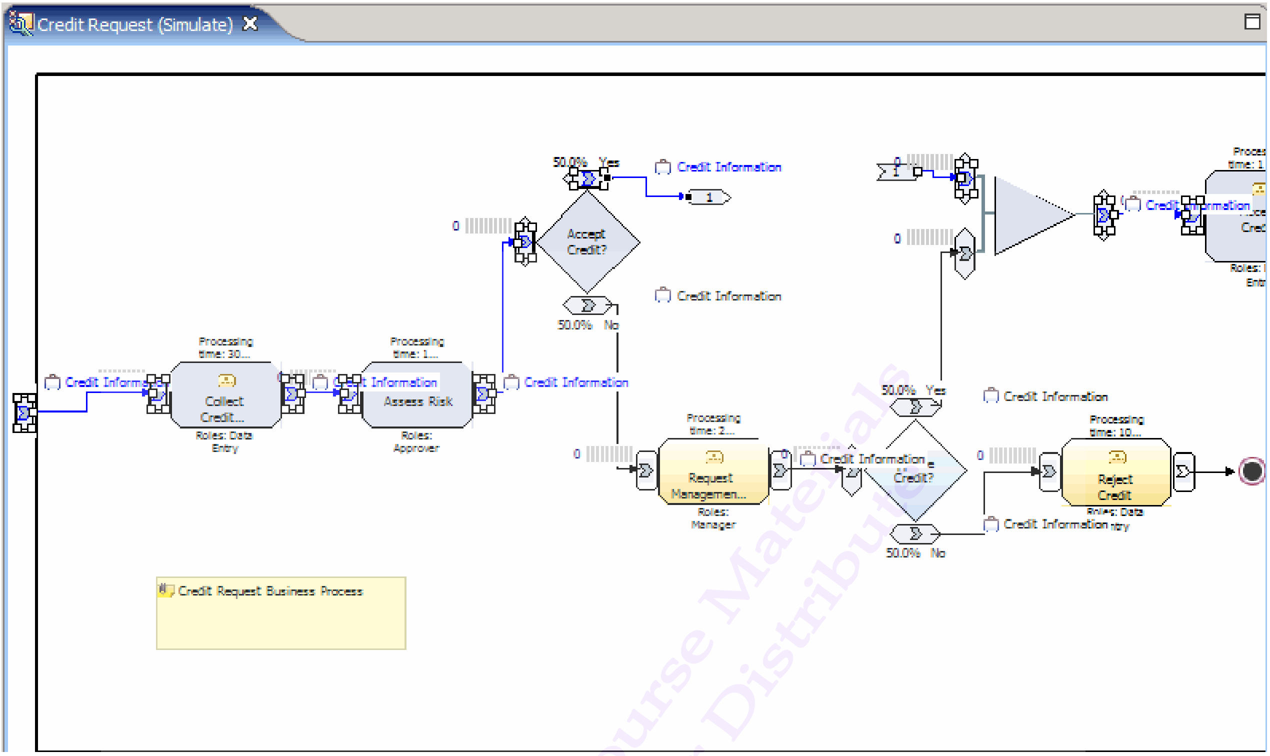
__ 4. Double-click **Case 1** from the results.



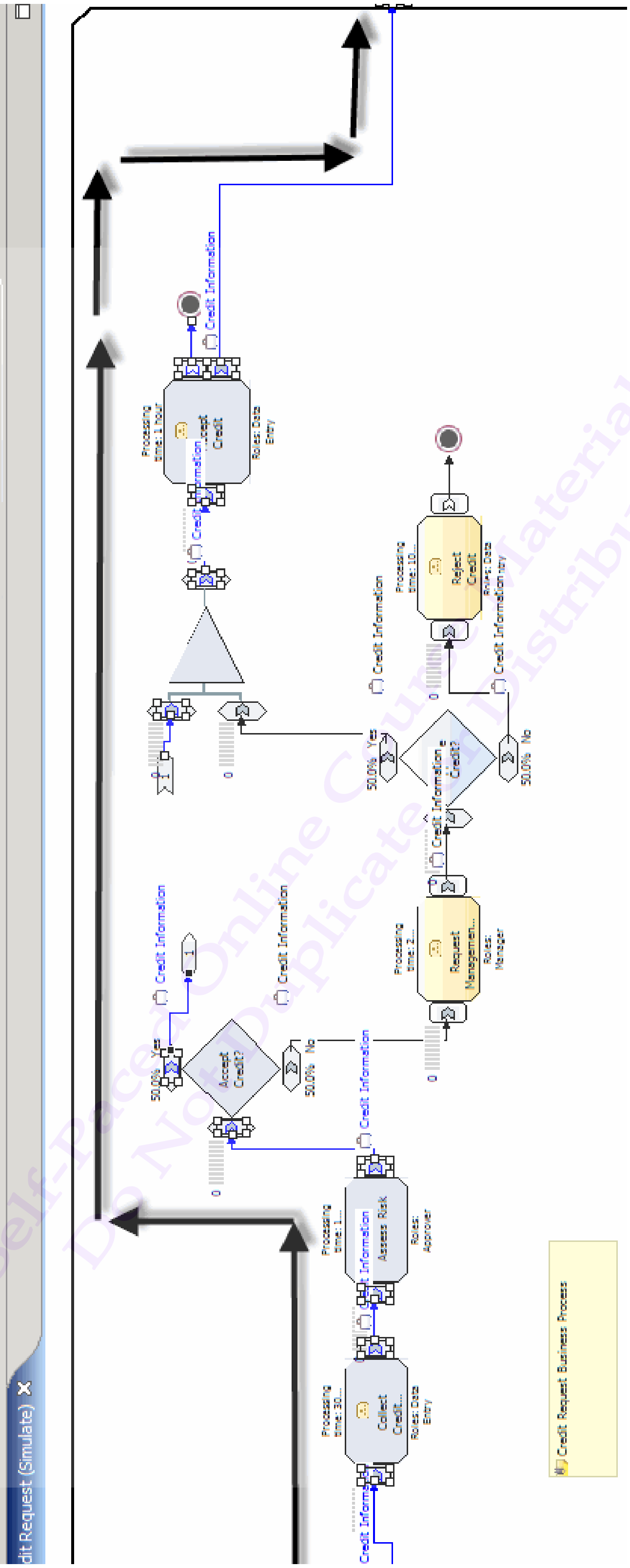
Process Cases Summary | Simulation result Sunday, March 11, 2007 12:00:14 PM PST | Credit Request Sunday, March 11, 2007 11:52:26 AM PS...

Case Name	Activity Name	Average Cost	Average Revenue	Average Run Cost	Average Delay Cost	Average Resource Cost	Average
⊟ Case 1		USD148.57	USD250.00	USD125.00	USD0.00	USD23.57	USD
	Credit Req...	USD148.57	USD250.00	USD125.00	USD0.00	USD23.57	USD
	Accept Credit	USD83.57	USD0.00	USD75.00	USD0.00	USD8.57	(USD
	Accept Cre...	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	US

The **Process Simulate** diagram displays.



Note that the path of **Case 1** is highlighted in the process diagram.

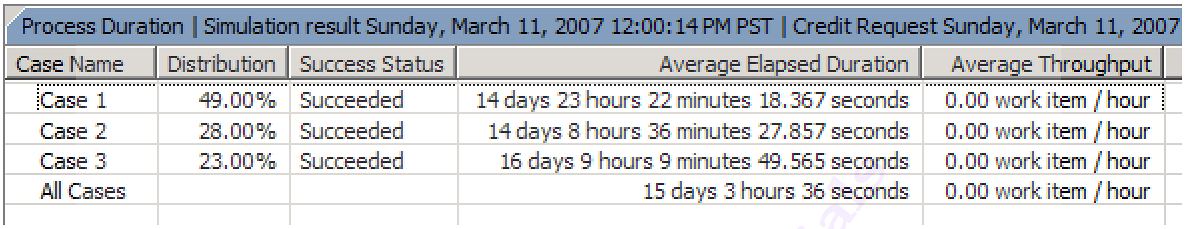


__ 5. Right-click the results, and select **Close All.**

__ 6. Right-click the simulation results in the Project Tree and select **Dynamic Analysis —> Process Cases Analysis —> Process Duration**.

__ 7. Select **All process instances** and click **Finish**.

The analysis results are displayed:



Process Duration | Simulation result Sunday, March 11, 2007 12:00:14 PM PST | Credit Request Sunday, March 11, 2007

Case Name	Distribution	Success Status	Average Elapsed Duration	Average Throughput
Case 1	49.00%	Succeeded	14 days 23 hours 22 minutes 18.367 seconds	0.00 work item / hour
Case 2	28.00%	Succeeded	14 days 8 hours 36 minutes 27.857 seconds	0.00 work item / hour
Case 3	23.00%	Succeeded	16 days 9 hours 9 minutes 49.565 seconds	0.00 work item / hour
All Cases			15 days 3 hours 36 seconds	0.00 work item / hour

The **Process Duration** analysis shows process elapsed duration and throughput details for each process case in a simulation.

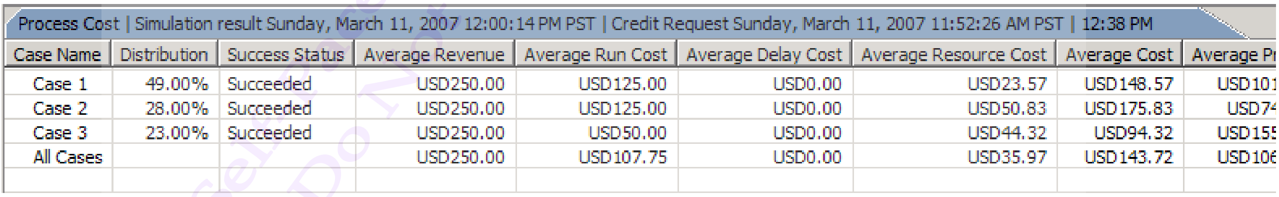
Process elapsed duration is the duration that a process case takes if started at a specific time and date. Process elapsed duration includes transfer times between activities and the elapsed durations of all activities on the critical path. The critical path is defined as the processing path that has the longest duration of all parallel paths in the process case. Calculations are performed per case by getting the simple average of the process instances duration records in a case.

__ 8. Right-click the results, and select **Close All.**

__ 9. Right-click the simulation results in the Project Tree and select **Dynamic Analysis —> Process Cases Analysis —> Process Cost**.

__ 10. Select **All process instances** and click **Finish**.

The analysis results are displayed:



Process Cost | Simulation result Sunday, March 11, 2007 12:00:14 PM PST | Credit Request Sunday, March 11, 2007 11:52:26 AM PST | 12:38 PM

Case Name	Distribution	Success Status	Average Revenue	Average Run Cost	Average Delay Cost	Average Resource Cost	Average Cost	Average Pr
Case 1	49.00%	Succeeded	USD250.00	USD125.00	USD0.00	USD23.57	USD148.57	USD101
Case 2	28.00%	Succeeded	USD250.00	USD125.00	USD0.00	USD50.83	USD175.83	USD74
Case 3	23.00%	Succeeded	USD250.00	USD50.00	USD0.00	USD44.32	USD94.32	USD155
All Cases			USD250.00	USD107.75	USD0.00	USD35.97	USD143.72	USD106

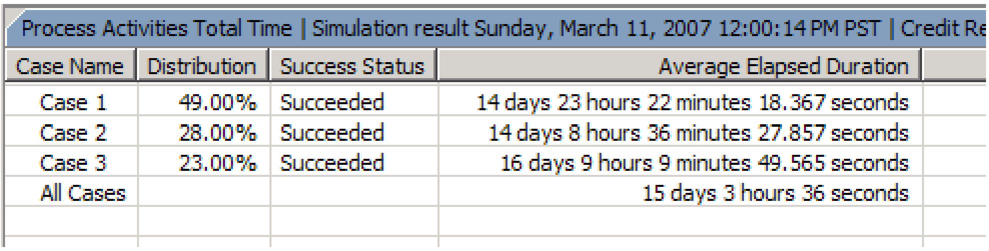
The **Process Cost** analysis shows the average cost and revenue for all process instances in each case in the current simulation result, and the weighted average costs and revenues for all process cases.

__ 11. Right-click the results, and select **Close All.**

__ 12. Right-click the simulation results in the Project Tree and select **Dynamic Analysis —> Process Cases Analysis —> Process Activities Total Time**.

__ 13. Select **All process instances** and click **Finish**.

The analysis results are displayed:



Process Activities Total Time | Simulation result Sunday, March 11, 2007 12:00:14 PM PST | Credit Re

Case Name	Distribution	Success Status	Average Elapsed Duration
Case 1	49.00%	Succeeded	14 days 23 hours 22 minutes 18.367 seconds
Case 2	28.00%	Succeeded	14 days 8 hours 36 minutes 27.857 seconds
Case 3	23.00%	Succeeded	16 days 9 hours 9 minutes 49.565 seconds
All Cases			15 days 3 hours 36 seconds

Process activities total time analysis shows total duration of activities in a process case.

Process activities total time is the total duration of activities in a process case. Process activities total time includes the durations of all the activities in the process, excluding subprocesses and loops.

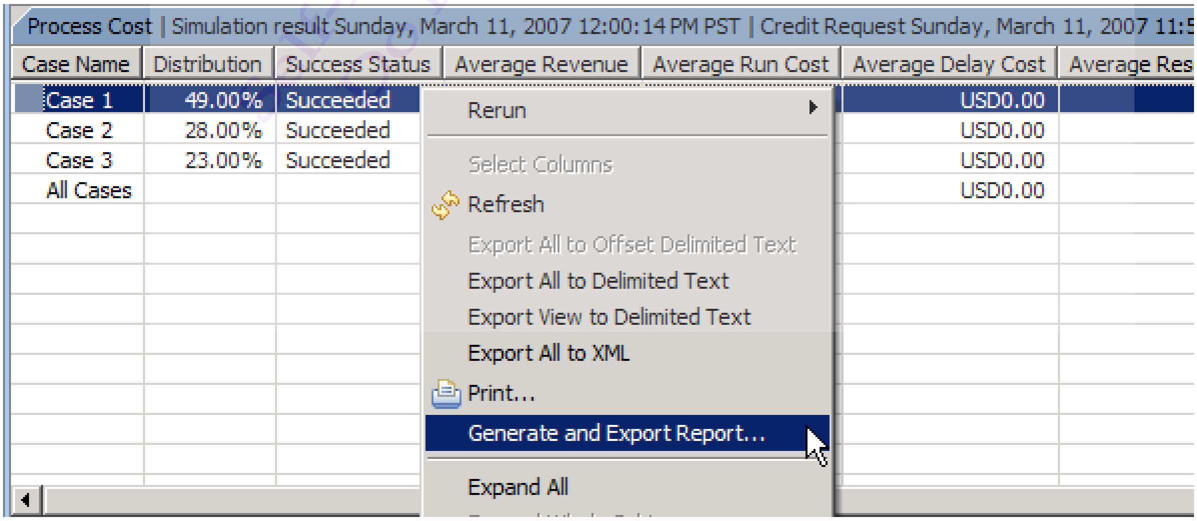
This analysis, like other process case analyses, may reveal unexpected results within specific process cases. For example, you may determine that the average elapse duration in a particular process case is unacceptably high. As a result of reviewing the information that this analysis presents, you may decide that you need to modify a process model or reset resource levels, or you may determine that you want to investigate further with another type of process case analysis such as process resource analysis. Alternatively, you can examine the duration results for specific process instances within a process case by running the process instance summary analysis and then the process instance time analysis.

Part 4: Generating and exporting reports

This section of the lab demonstrates how to generate and export the results of any analysis that you have run and have not closed in the Analysis view.

The **Process Cost Analysis** results are displayed in the **Dynamic Analysis view** in the bottom right pane.

__ 1. Right-click the analysis view and select **Generate and Export Report**.



Process Cost | Simulation result Sunday, March 11, 2007 12:00:14 PM PST | Credit Request Sunday, March 11, 2007 11:5

Case Name	Distribution	Success Status	Average Revenue	Average Run Cost	Average Delay Cost	Average Res
Case 1	49.00%	Succeeded			USD0.00	
Case 2	28.00%	Succeeded			USD0.00	
Case 3	23.00%	Succeeded			USD0.00	
All Cases					USD0.00	

Rerun
Select Columns
Refresh
Export All to Offset Delimited Text
Export All to Delimited Text
Export View to Delimited Text
Export All to XML
Print...
Generate and Export Report...
Expand All

__ 2. Select **ProcessCost** from the **Report Template** window.

The **Enter Parameters Values** dialog box is displayed:

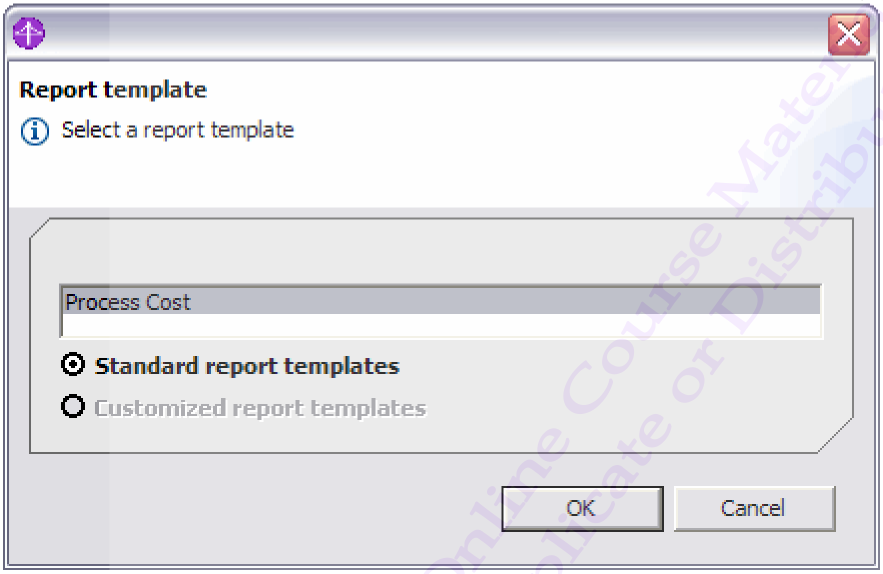
__ 3. Select **Company Name** and enter `Pacific Bank` in the **Parameter Value** field.

__ 4. Select **Company Address** and enter `123 Pacific Drive, San Francisco, CA` in the **Parameter Value** field.

__ 5. Select **Company E-mail** and enter `contactus@pacific-bank.com` in the **Parameter Value** field.

__ 6. Click **OK**.

__ 7. The **Standard report templates** option should already be selected.



Report template

ⓘ Select a report template

Process Cost

● **Standard report templates**

○ Customized report templates

__ 8. Click **OK**.

If this is the first time you generate a report, you may need to load fonts into Modeler. Click **OK** from the **Fonts Warning**. The **Preference** window is displayed. See the note below.

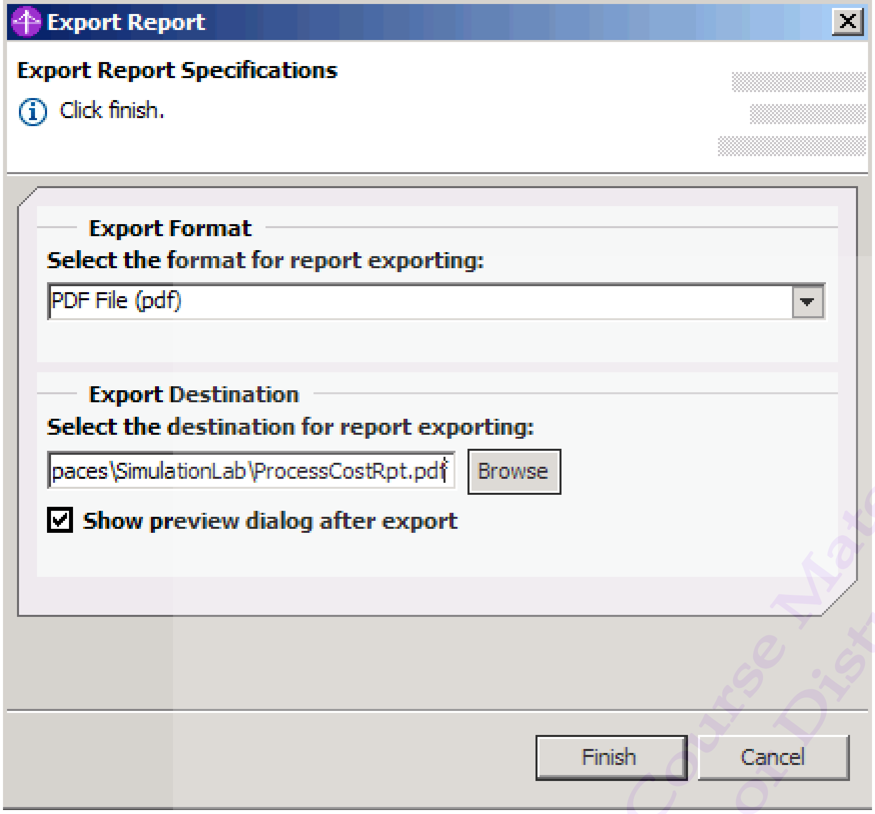
For Windows 2000:	For Windows XP:
Click the **browse** button … to navigate to folder **C:\WINNT\Fonts**. Click the **Load Fonts** button. Click **Select All**. Click **Update**. Click **OK**.	Click the browse button … to navigate to folder **C:\Windows\Fonts**. Click **OK**. Click the **Load Fonts** button (this may take some time). Click **Select All**. Click **Update**. Click **OK**.

__ 9. Click the **Browse** button to choose the **C:\ClassWorkspaces**\ drive in the **Export Report** window.

__ 10. Type `ProcessCostRpt.pdf` as the file name.

__ 11. Click **Save**.

__ 12. Select the **Show preview dialog after export** option.



Export Report

Export Report Specifications

Click finish.

Export Format

Select the format for report exporting: PDF File (pdf)

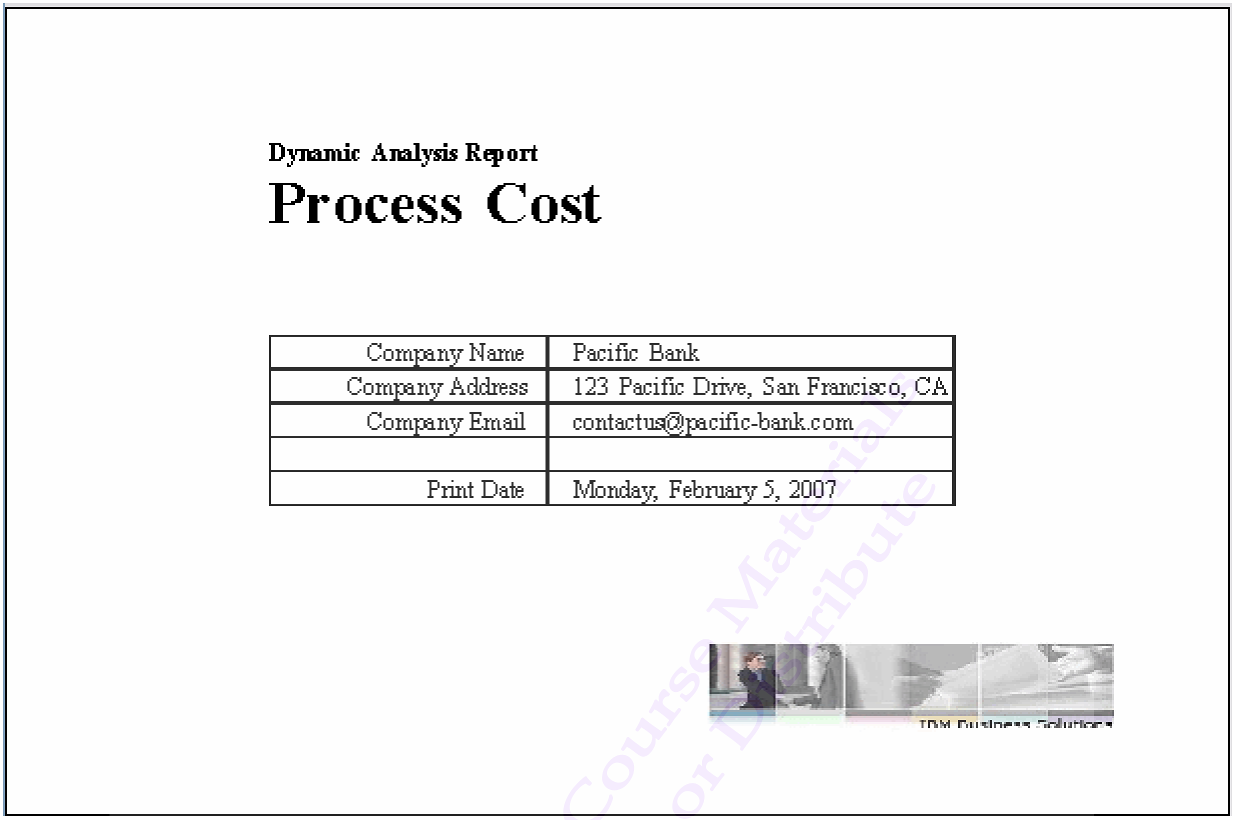
Export Destination

Select the destination for report exporting: paces\SimulationLab\ProcessCostRpt.pdf

☑ Show preview dialog after export

__ 13. Click **Finish**.

__ 14. A **Preview Dialog** will display the process cost report:



Dynamic Analysis Report

Process Cost

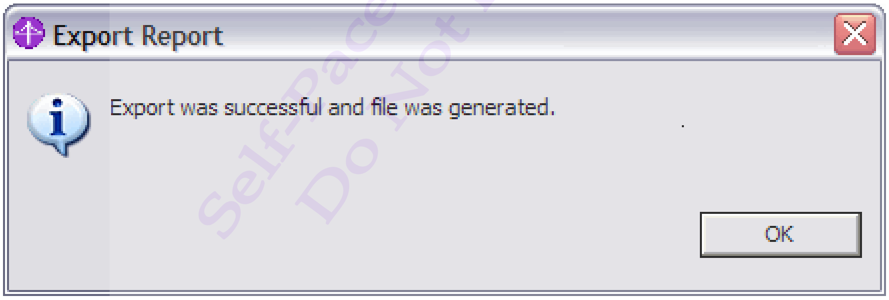
Company Name	Pacific Bank
Company Address	123 Pacific Drive, San Francisco, CA
Company Email	contactus@pacific-bank.com
Print Date	Monday, February 5, 2007

__ 15. Review all the pages in this document.

__ 16. Close the ***Preview*** Dialog when finished.

The **ProcessCostRpt.pdf** file can be located in the **C:\ClassWorkspace\SimulationLab** directory.

__ 17. In Modeler, click **OK** to close the **Export Report** dialog box.



Export was successful and file was generated.

__ 18. Save your work (Ctrl+S).

__ 19. Exit Modeler (**File** —> **Exit**).

You may play the flashcard game after completion of the lab exercise.

Part 5: WebSphere games: Quiz game

Introduction

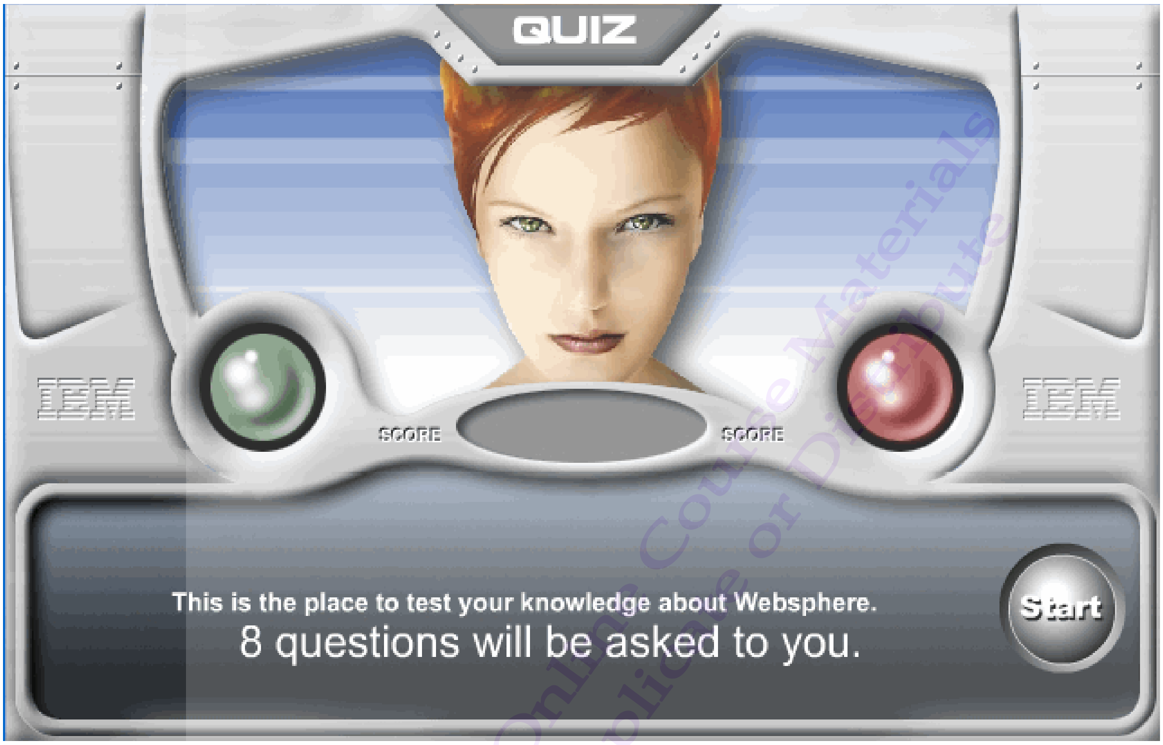
This game will test your knowledge for all the materials that are covered in this course.

Self-Paced Course Material
Do Not Duplicate or Distribute

In this game, you start out with 1000 points and are allowed to wager a percentage (20%-100%) of your points on each question asked. For each correct answer, you will receive the amount of points wagered. For each incorrect answer, you will lose the amount wagered. Your objective is to maximize your total number of points.

__ 1. Navigate to **C:\Student Files\Games\QuizGame** and double-click **QuizGame.html**.

Your Web browser will open and launch the Quiz game.

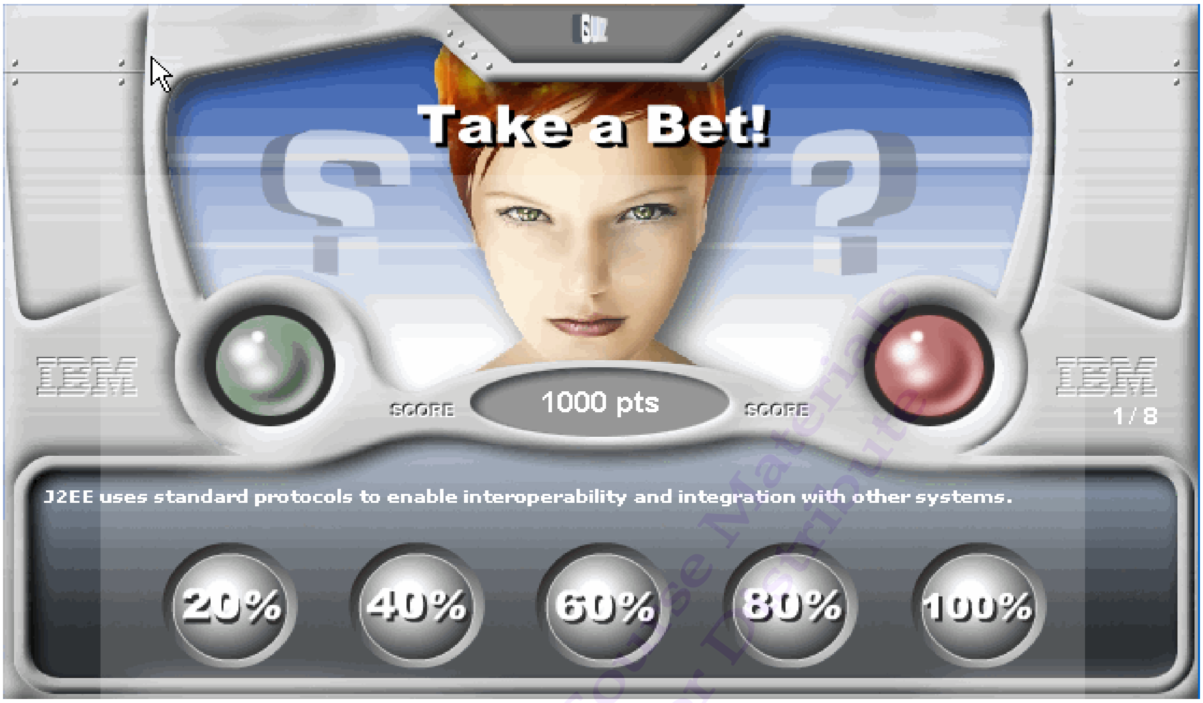


This is the place to test your knowledge about Websphere.

8 questions will be asked to you.

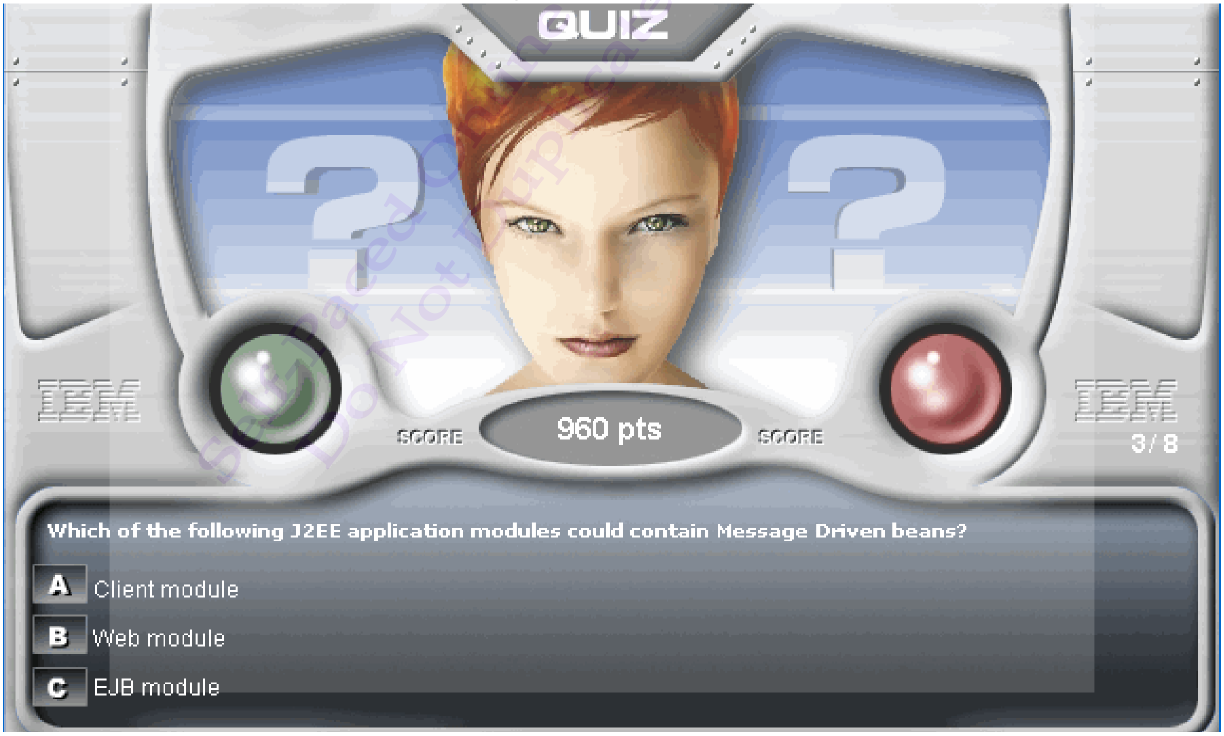
__ 2. Press the **Start** button.

__ 3. Read the question and decide what percentage of your points you want to wager. Remember that if you get the question wrong, you will lose that percentage of points.



J2EE uses standard protocols to enable interoperability and integration with other systems.

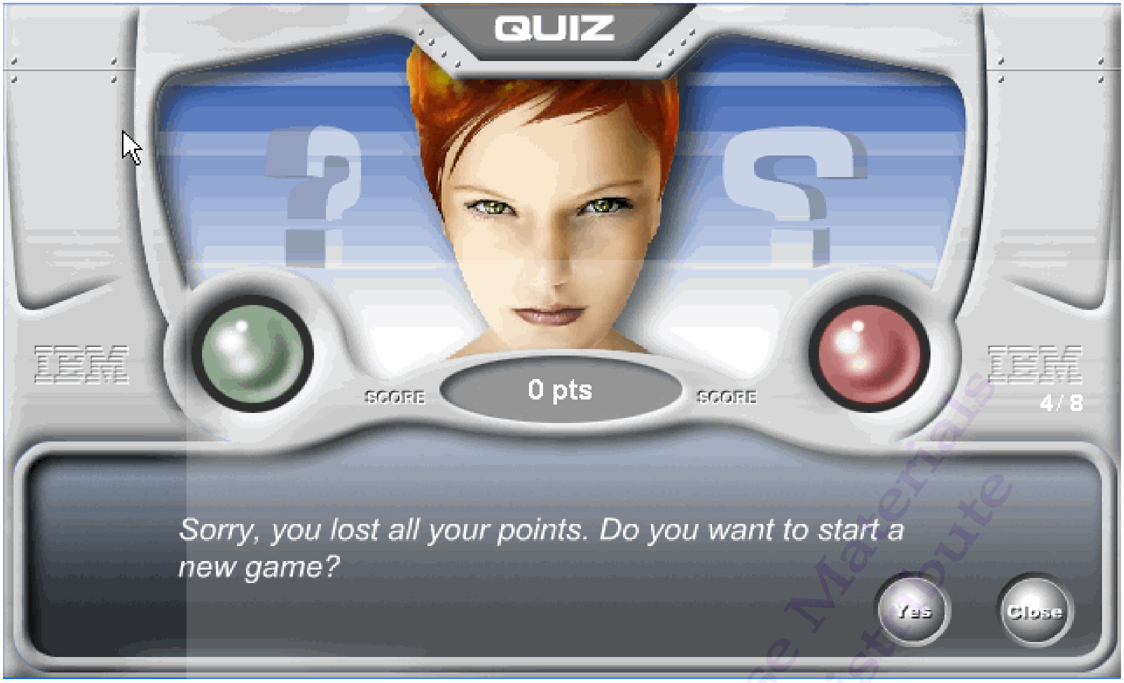
__ 4. Press the letter corresponding to what you think the answer is.



Which of the following J2EE application modules could contain Message Driven beans?

A Client module
B Web module
C EJB module

__ 5. If you lose all your points, you may restart the game by clicking **Yes** when asked.



Sorry, you lost all your points. Do you want to start a new game?

Part 6: Review questions

Your instructor will review the following questions with you.

__ 1. What is profile specification?

____

__ 2. What is the function of process cases summary?

____

__ 3. What is dynamic analysis?

____

__ 4. Which analysis shows the differences and similarities in simulation results between two different simulation runs?

____

END OF EXERCISE

Exercise 6. Simulation with statistical distribution

What this exercise is about

This lab will cover advanced simulation, distributions, and advanced dynamic analysis.

What you should be able to do

At the end of the lab, you should be able to:

- Run a simulation with normal distribution
- Conduct dynamic analysis for normal distribution
- Run a simulation with uniform distribution
- Conduct dynamic analysis for uniform distribution
- Run a simulation with exponential distribution
- Conduct process analysis for exponential distribution
- Set up probabilities of decisions

Requirements

Previous labs should be completed successfully.

Exercise instructions

Part 1: Opening workspace

__ 1. To launch Modeler, click **Start —> Programs —> IBM WebSphere —> Business Modeler**.

__ 2. Browse to **C:\ClassWorkspaces\SimultaionLab**.

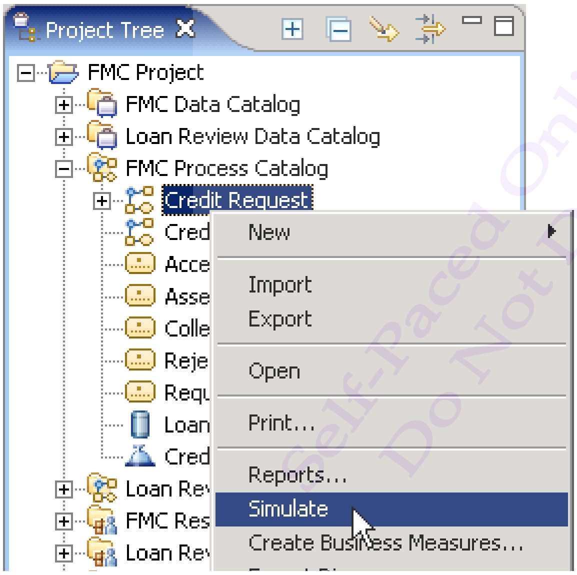
__ 3. Click **OK**.

Part 2: Running a simulation with normal distribution

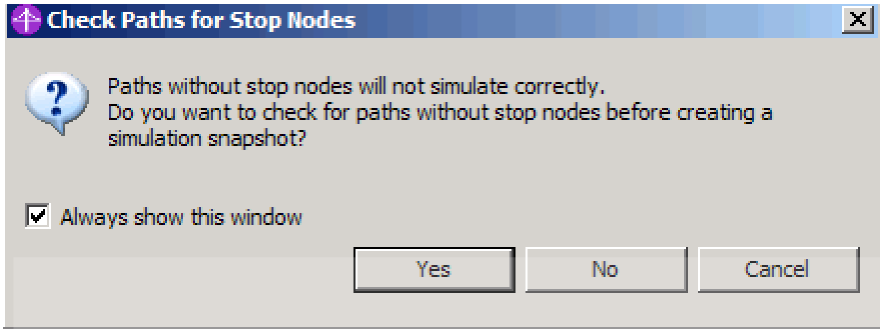
Dynamic analysis provides information on the results of one or more process simulations. Dynamic analysis therefore reflects not only the underlying process model and other model elements that are used in simulations, but also the simulation results based on attributes that you specify for a particular simulation profile.

When processes are executed, each execution of the process is a process instance. Dynamic analysis can be used to extract information on specific process instances or on all process instances together. Comparative analysis can also be performed on the results of two different simulations.

__ 1. From the Project Tree, right-click the **Credit Request** process and select **Simulate** from the context menu.



__ 2. Click **Yes** if the following window appears.

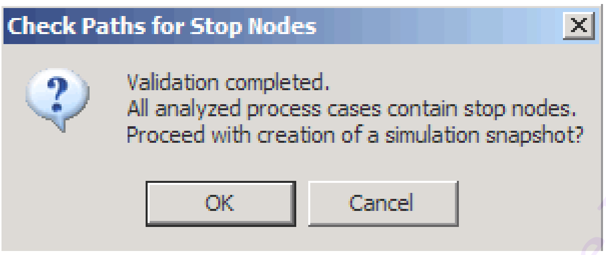


Check Paths for Stop Nodes

Paths without stop nodes will not simulate correctly.
Do you want to check for paths without stop nodes before creating a simulation snapshot?

☑ Always show this window

__ 3. Click **OK** if the following window appears.

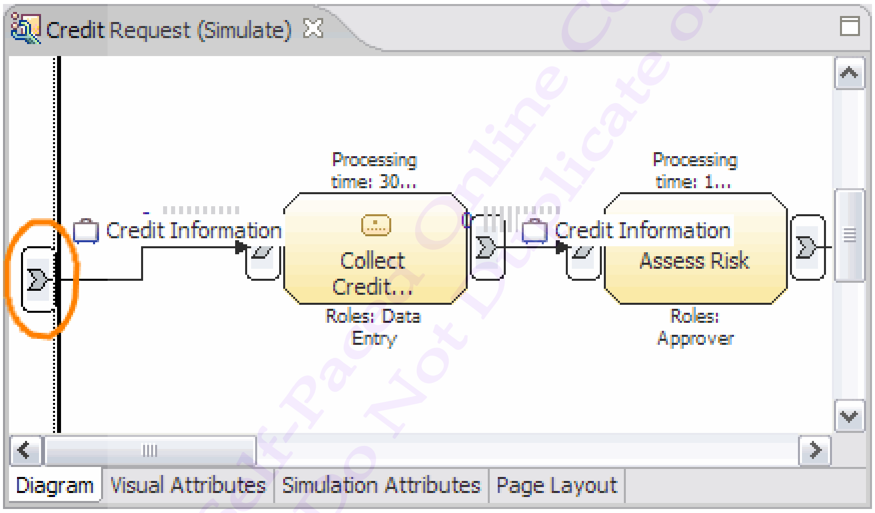


Check Paths for Stop Nodes

Validation completed.
All analyzed process cases contain stop nodes.
Proceed with creation of a simulation snapshot?

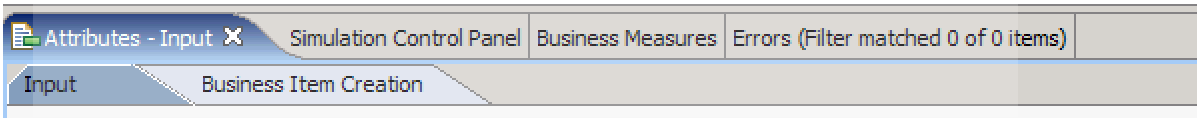
After the simulation snapshot has been created, a simulation editor opens.

__ 4. Within the simulation editor, select the process input (see circle below).



__ 5. In the bottom pane of the screen, click the **Attributes - Input** pane.

__ 6. Click the **Input** tab.

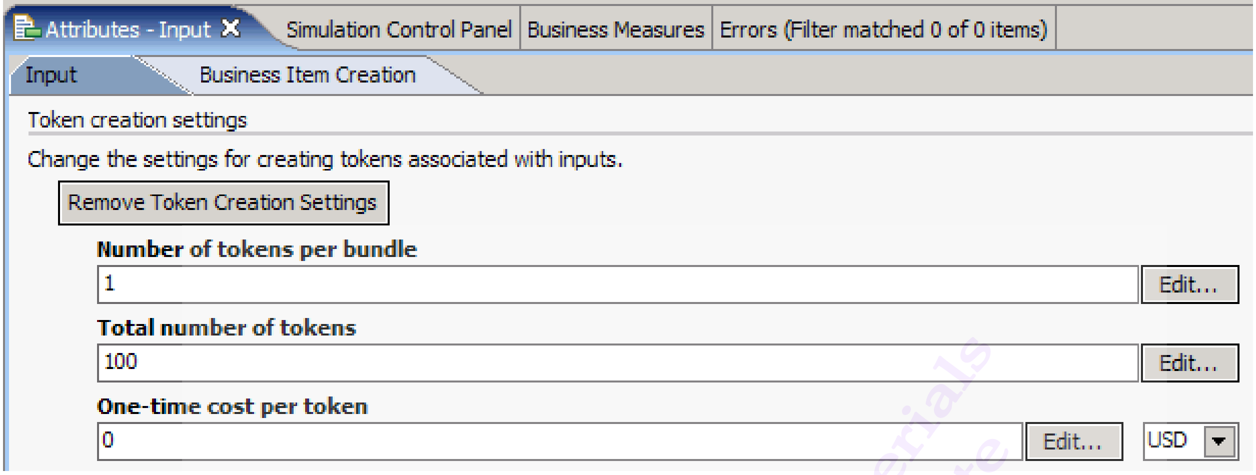


__ 7. Set the **Total number of tokens** to `100`.

a. Click **Edit** next to **Total number of tokens.**

b. Enter `100` under **Specific value**.

c. Click **OK.**



Token creation settings

Change the settings for creating tokens associated with inputs.

Number of tokens per bundle: 1

Total number of tokens: 100

One-time cost per token: 0 USD

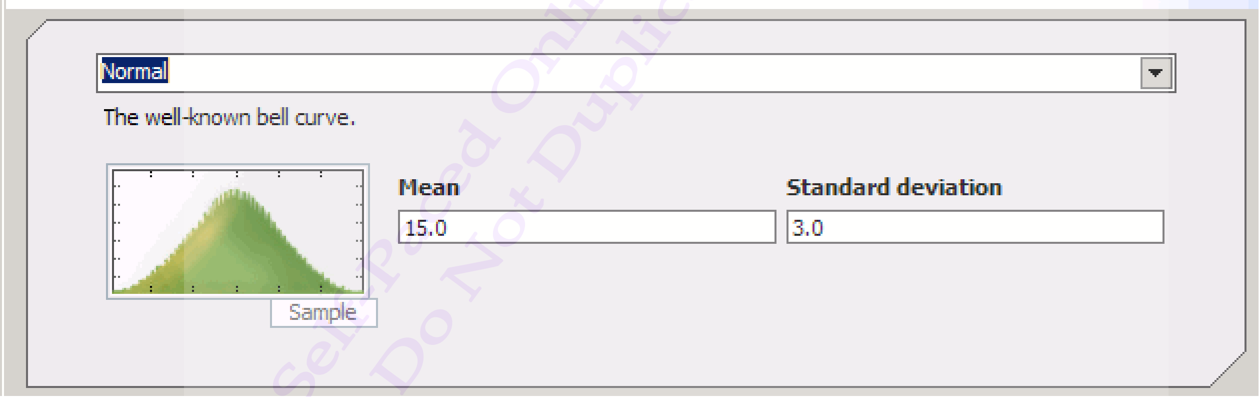
__ 8. Select the **Random time trigger** radio button.
Choosing this option means that the date and time value entered in the **Time trigger** field (above Random time trigger) will no longer be used.

__ 9. Verify that the measurement unit is **Minutes**.

__ 10. Click **Edit**.

__ 11. Choose **Normal** from the **Distribution** drop-down menu, and enter Mean 15 and Standard Deviation 3.

This will generate simulation tokens clustered mainly around 15-minute intervals.



Normal

The well-known bell curve.

Mean: 15.0

Standard deviation: 3.0

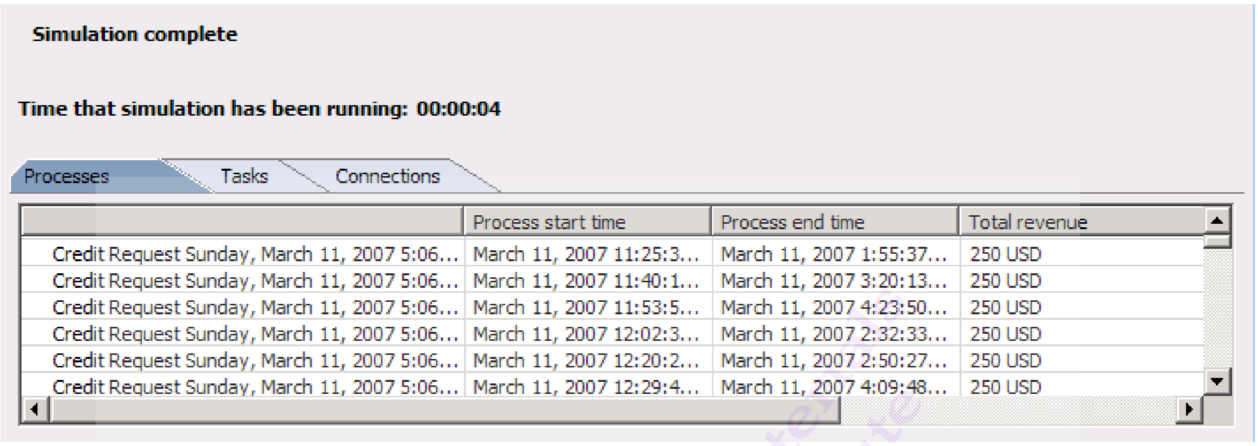
__ 12. Click **OK**.

__ 13. Save the simulation settings (Ctrl+S).

__ 14. Go to the **Simulation Control Panel** view.

__ 15. Click the **Run simulation** button to begin simulation.

The results are displayed upon completion of the simulation. The **Processes** tab in the Control Panel view displays statistics relating to each activation of the simulated process as a whole, such as start and end times, total revenue, total cost, and total profit.

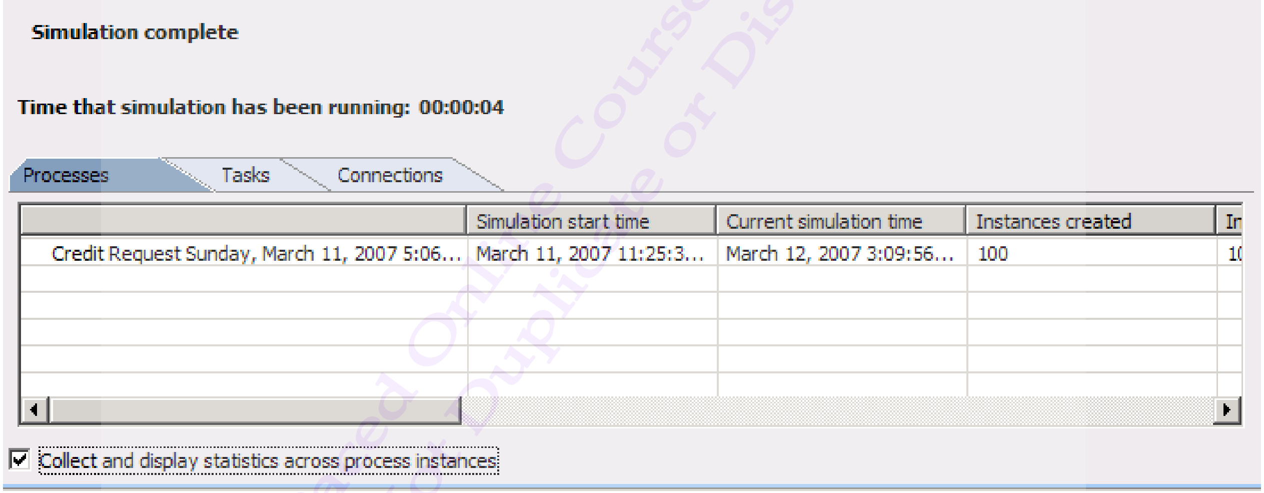


Simulation complete

Time that simulation has been running: 00:00:04

	Process start time	Process end time	Total revenue
Credit Request Sunday, March 11, 2007 5:06...	March 11, 2007 11:25:3...	March 11, 2007 1:55:37...	250 USD
Credit Request Sunday, March 11, 2007 5:06...	March 11, 2007 11:40:1...	March 11, 2007 3:20:13...	250 USD
Credit Request Sunday, March 11, 2007 5:06...	March 11, 2007 11:53:5...	March 11, 2007 4:23:50...	250 USD
Credit Request Sunday, March 11, 2007 5:06...	March 11, 2007 12:02:3...	March 11, 2007 2:32:33...	250 USD
Credit Request Sunday, March 11, 2007 5:06...	March 11, 2007 12:20:2...	March 11, 2007 2:50:27...	250 USD
Credit Request Sunday, March 11, 2007 5:06...	March 11, 2007 12:29:4...	March 11, 2007 4:09:48...	250 USD

__ 16. Click the **Collect and display statistics across process instances** check box to view generated statistics as averages for all process instances.



Simulation complete

Time that simulation has been running: 00:00:04

	Simulation start time	Current simulation time	Instances created	In
Credit Request Sunday, March 11, 2007 5:06...	March 11, 2007 11:25:3...	March 12, 2007 3:09:56...	100	10

☑ Collect and display statistics across process instances

For easier referencing in the future, rename the simulation results with a clearer label:

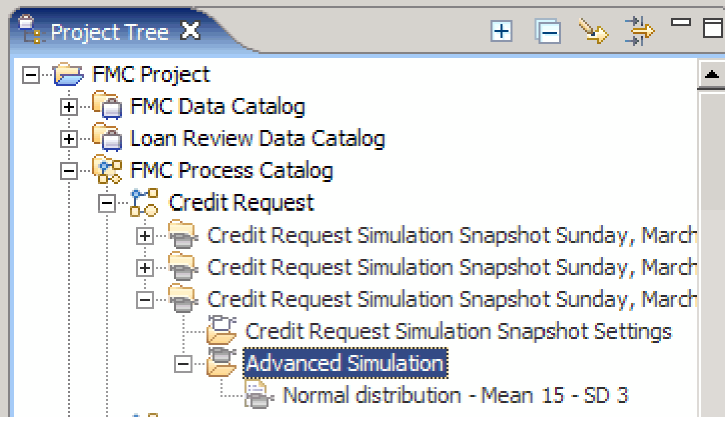
__ 17. From the Project Tree, right-click the most recent simulation result (result with most current timestamp) and select **Rename**.

Note

Alternatively, select the item to be renamed, and press the F2 key on the keyboard.

__ 18. Rename the simulation result to `Normal distribution - Mean 15 - SD 3` and press Enter.

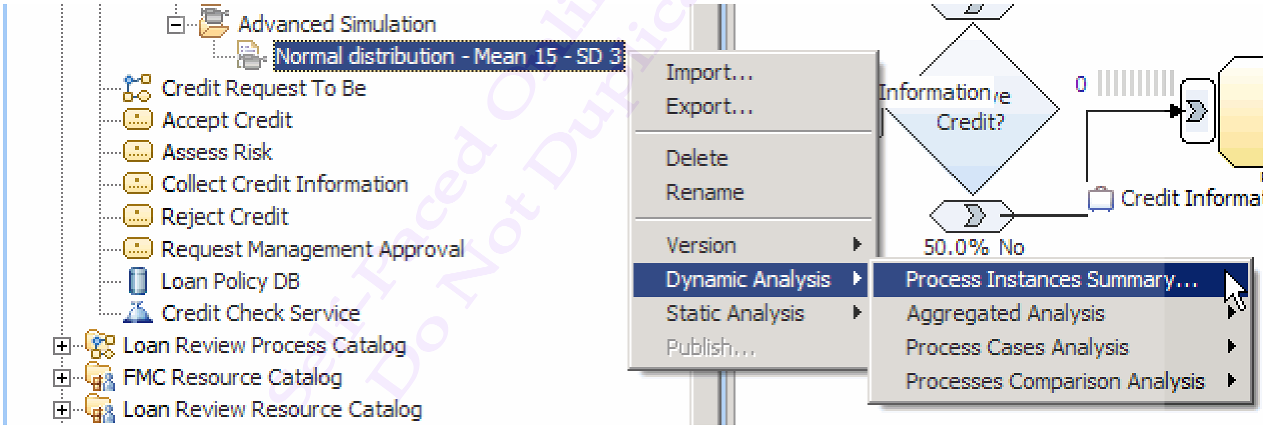
__ 19. Similarly, rename the folder containing this simulation result to `Advanced Simulation`.


Project Tree
FMC Project
FMC Data Catalog
Loan Review Data Catalog
FMC Process Catalog
Credit Request
Credit Request Simulation Snapshot Sunday, March
Credit Request Simulation Snapshot Sunday, March
Credit Request Simulation Snapshot Sunday, March
Credit Request Simulation Snapshot Settings
Advanced Simulation
Normal distribution - Mean 15 - SD 3

Part 3: Dynamic analysis for normal distribution

You can analyze process simulation results to extract specific information on the monetary results, times, and statistics generated from running a simulation. From this analysis, you can identify problems in the way the process currently works and you can compare the results that you produce when you simulate different variations of the same process.

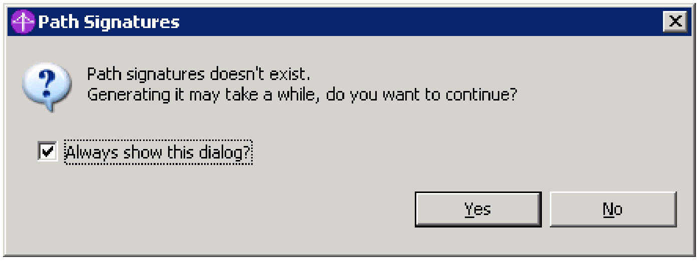
__ 1. Right-click the simulation result labeled **Normal distribution - Mean 15 - SD 3** in the Project Tree and select **Dynamic Analysis —> Process Instances Summary...**



__ 2. Select the **All process instances** option from the Process Instances Summary Analysis window.

__ 3. Click **Finish**.

__ 4. Click **Yes** if the **Path Signatures** dialog box appears.

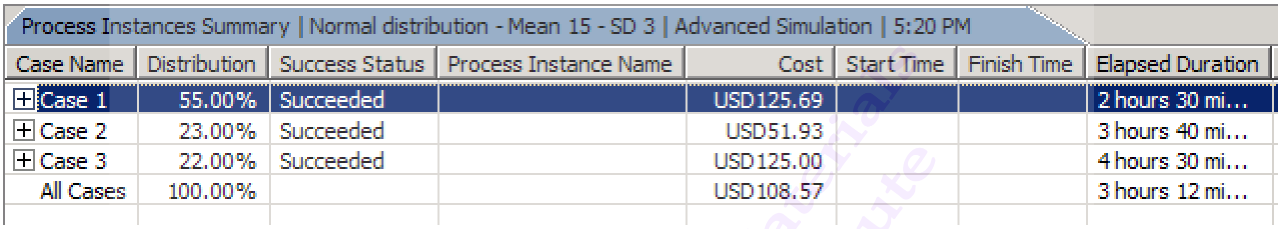


Path Signatures

Path signatures doesn't exist.
Generating it may take a while, do you want to continue?

☑ Always show this dialog?

Analysis results display in the **Dynamic Analysis** pane:



Process Instances Summary | Normal distribution - Mean 15 - SD 3 | Advanced Simulation | 5:20 PM

Case Name	Distribution	Success Status	Process Instance Name	Cost	Start Time	Finish Time	Elapsed Duration
+ Case 1	55.00%	Succeeded		USD125.69			2 hours 30 mi...
+ Case 2	23.00%	Succeeded		USD51.93			3 hours 40 mi...
+ Case 3	22.00%	Succeeded		USD125.00			4 hours 30 mi...
All Cases	100.00%			USD108.57			3 hours 12 mi...

Processes that contain branches and decisions have multiple possible execution paths, also known as cases. This report lists the cases for a simulated process, and for each case shows the percentage of all process instances that match the path defined by that case. This report also lists process instances created in the simulation, grouped by case.

__ 5. Expand each case by clicking the (**+**) icon.

Additional process details, such as total cost, start time, and elapsed duration, are displayed.

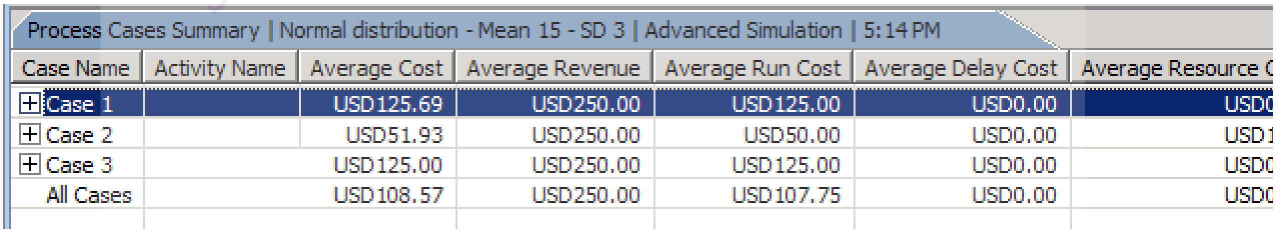
As each case is selected, the corresponding path will be highlighted in blue in the process diagram of the simulation editor.

__ 6. Right-click the results, and select **Close All.**

__ 7. Right-click the simulation result labeled **Normal distribution - Mean 15 - SD 3** in the **Project Tree** and select **Dynamic Analysis —> Process Cases Analysis —> Process Cases Summary**.

__ 8. Select **All process instances** and click **Finish**.

Analysis results display in the **Dynamic Analysis** pane:



Process Cases Summary | Normal distribution - Mean 15 - SD 3 | Advanced Simulation | 5:14 PM

Case Name	Activity Name	Average Cost	Average Revenue	Average Run Cost	Average Delay Cost	Average Resource C
+ Case 1		USD125.69	USD250.00	USD125.00	USD0.00	USD0
+ Case 2		USD51.93	USD250.00	USD50.00	USD0.00	USD1
+ Case 3		USD125.00	USD250.00	USD125.00	USD0.00	USD0
All Cases		USD108.57	USD250.00	USD107.75	USD0.00	USD0

The Process Cases Summary Analysis shows summary details for all the process cases produced during the simulation of a process. (A process case is defined as a set of process instances that have the same execution path.) This analysis takes into account the results for each process case generated in a simulation, and weights these values according to the percentage of all generated process instances that match the current case.

__ 9. Expand each case by clicking the (+) icon.

Additional process details, such as average total cost and average elapsed duration, are displayed.

__ 10. Right-click the results, and select **Close All.**

Part 4: Running a simulation with uniform distribution

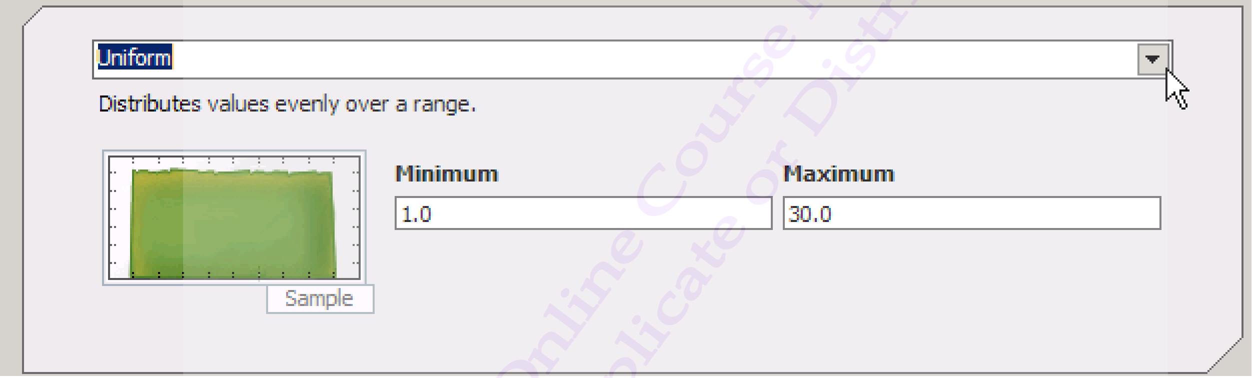
__ 1. Click the diagram, and switch to the **Attributes** pane.

__ 2. Select the **Inputs** tab.

__ 3. Click the **Edit** button under **Random time trigger**.

__ 4. Choose **Uniform** from the **Distribution** drop-down menu, and enter Minimum `1` and Maximum `30`.

This will generate simulation tokens at time intervals (between 1 and 30 minutes) that are all equally probable.



Uniform

Distributes values evenly over a range.

Minimum: 1.0

Maximum: 30.0

__ 5. Click **OK**.

__ 6. Save the simulation settings (Ctrl+S).

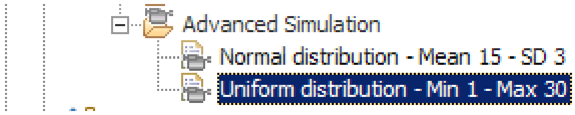
__ 7. Select the **Simulation Control Panel** view and click the **Run simulation** button.

The results are displayed upon completion of the simulation.

Note that each process instance began within one to thirty minutes after the previous process instance was started.

__ 8. From the Project Tree, right-click the most recent simulation result and select **Rename**.

__ 9. Rename the simulation result to `Uniform distribution - Min 1 - Max 30`.



Advanced Simulation
Normal distribution - Mean 15 - SD 3
Uniform distribution - Min 1 - Max 30

Take a moment to review what you have completed so far:

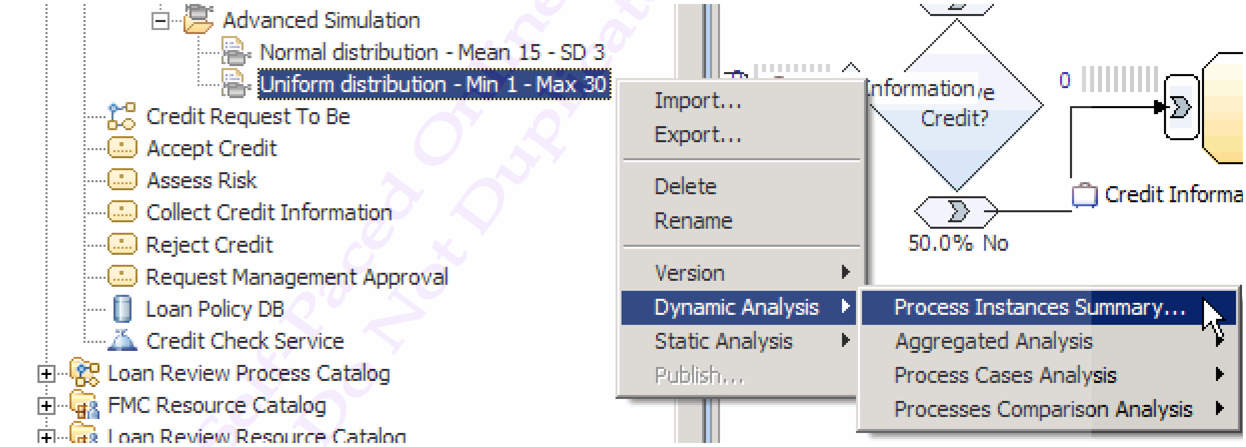
- In the previous lab, you set the global attributes in the business modeling preferences and created a simulation snapshot. You then set the local attributes preferences and created another simulation snapshot.
- Within that simulation profile, you modified process and task attributes for the normal-distribution exercise. You then ran a simulation based on all these settings.
- After viewing the results, you performed dynamic analysis to generate summaries of process cases and process instances.
- You then revised the simulation profile to simulate a uniform distribution and reran the simulation.

Running a revised simulation enables you to observe any changes in the results of a process after you modify the simulation's attributes.

Part 5: Dynamic analysis for uniform distribution

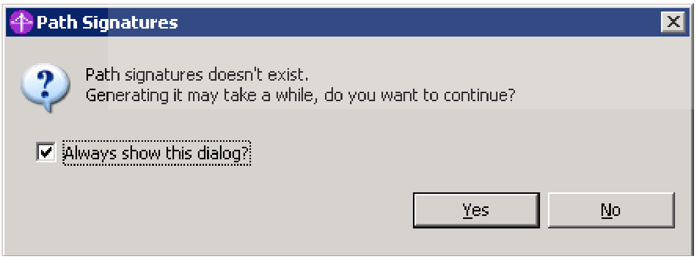
You can analyze process simulation results to extract specific information on the monetary results, times, and statistics generated from running a simulation. From this analysis, you can identify problems in the way the process currently works and you can compare the results that you produce when you simulate different variations of the same process.

__ 1. Right-click the simulation result labeled **Uniform distribution - Min 1 - Max 30** in the **Project Tree** and select **Dynamic Analysis —> Process Instances Summary**:



__ 2. Select **All process instances** and click **Finish**.

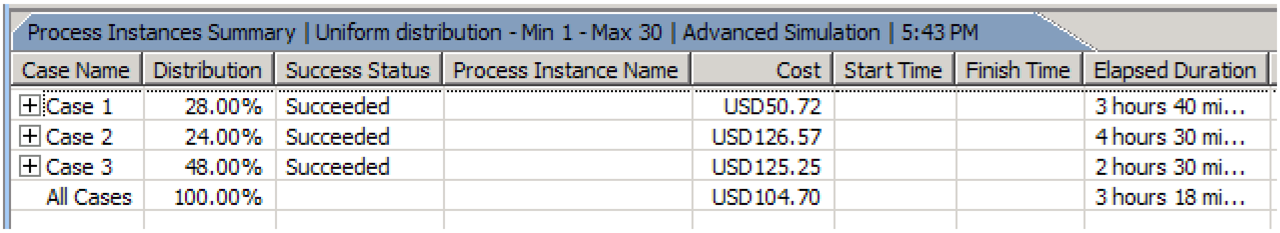
__ 3. Click **Yes** if the **Path Signatures** dialog box appears.


Path Signatures

Path signatures doesn't exist.
Generating it may take a while, do you want to continue?

☑ Always show this dialog?

__ 4. Analysis results display in the **Dynamic Analysis** pane:



Process Instances Summary | Uniform distribution - Min 1 - Max 30 | Advanced Simulation | 5:43 PM

Case Name	Distribution	Success Status	Process Instance Name	Cost	Start Time	Finish Time	Elapsed Duration
⊞ Case 1	28.00%	Succeeded		USD50.72			3 hours 40 mi...
⊞ Case 2	24.00%	Succeeded		USD126.57			4 hours 30 mi...
⊞ Case 3	48.00%	Succeeded		USD125.25			2 hours 30 mi...
All Cases	100.00%			USD104.70			3 hours 18 mi...

__ 5. Expand each case by clicking the (**+**) icon.

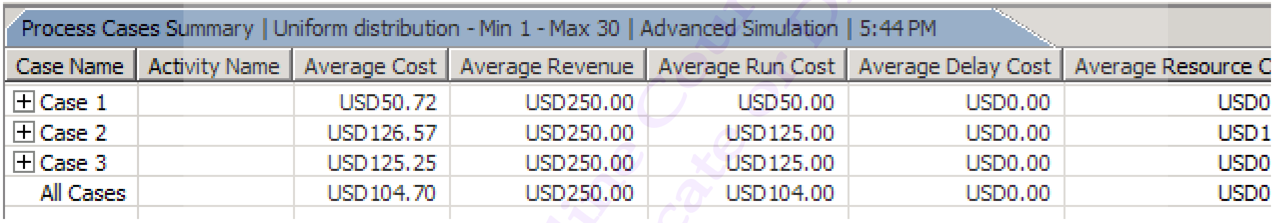
Additional process details, such as total cost, start time, and elapsed duration, are displayed.

__ 6. Right-click the results, and select **Close All.**

__ 7. Right-click the simulation result labeled **Uniform distribution - Min 1 - Max 30** in the **Project Tree** and select **Dynamic Analysis —> Process Cases Analysis —> Process Cases Summary**:

__ 8. Select **All process instances** and click **Finish**.

Analysis results display in the **Dynamic Analysis** pane:



Process Cases Summary | Uniform distribution - Min 1 - Max 30 | Advanced Simulation | 5:44 PM

Case Name	Activity Name	Average Cost	Average Revenue	Average Run Cost	Average Delay Cost	Average Resource C
⊞ Case 1		USD50.72	USD250.00	USD50.00	USD0.00	USD0
⊞ Case 2		USD126.57	USD250.00	USD125.00	USD0.00	USD1
⊞ Case 3		USD125.25	USD250.00	USD125.00	USD0.00	USD0
All Cases		USD104.70	USD250.00	USD104.00	USD0.00	USD0

__ 9. Expand the cases by clicking the (**+**) icon.

Additional process details, such as average total cost and average elapsed duration, are displayed.

__ 10. Right-click the results, and select **Close All.**

Part 6: Running simulation with exponential distribution

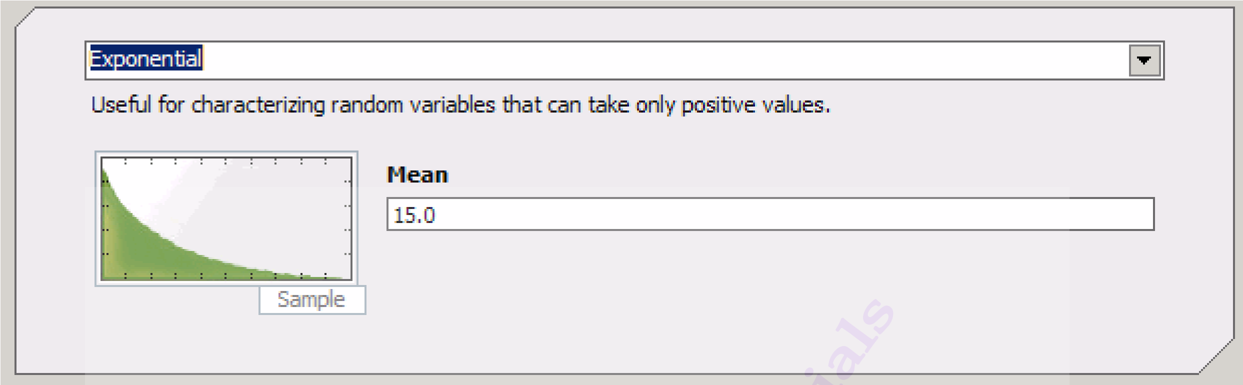
__ 1. Click the diagram, and click the **Attributes** pane.

__ 2. Select the **Inputs** tab.

__ 3. Click the **Edit** button under **Random time trigger**.

__ 4. Choose **Exponential** from the **Distribution** drop-down menu, and enter Mean 15.

This will generate simulation tokens at time intervals that have a mean of 15 minutes.



Exponential

Useful for characterizing random variables that can take only positive values.

Mean

15.0

__ 5. Click **OK**.

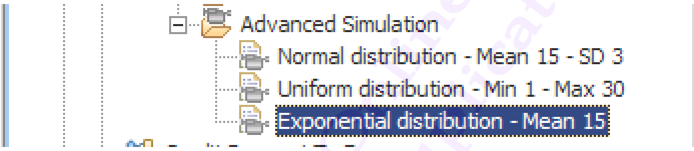
__ 6. Save the simulation settings (Ctrl+S).

__ 7. Select the **Simulation Control Panel** view and click the **Run simulation** button.

The results are displayed upon completion of the simulation.

__ 8. From the Project Tree, right-click the most recent simulation result and select **Rename**.

__ 9. Rename the simulation result to `Exponential distribution - Mean 15`.



Advanced Simulation
Normal distribution - Mean 15 - SD 3
Uniform distribution - Min 1 - Max 30
Exponential distribution - Mean 15

__ 10. Press **Enter**.

Part 7: Process analysis for exponential distribution

You can analyze process simulation results to extract specific information on the monetary results, times and statistic generated from running a simulation. From this analysis, you can identify problems in the way the process currently works and you can compare the results that you produce when you simulate different variations of the same process.

__ 1. Right-click the simulation result labeled **Exponential distribution - Mean 15** in the **Project Tree** and select **Dynamic Analysis —> Process Instances Summary**.

__ 2. Select **All process instances** and click **Finish**.

__ 3. Click **Yes** if the **Path Signatures** dialog box appears.

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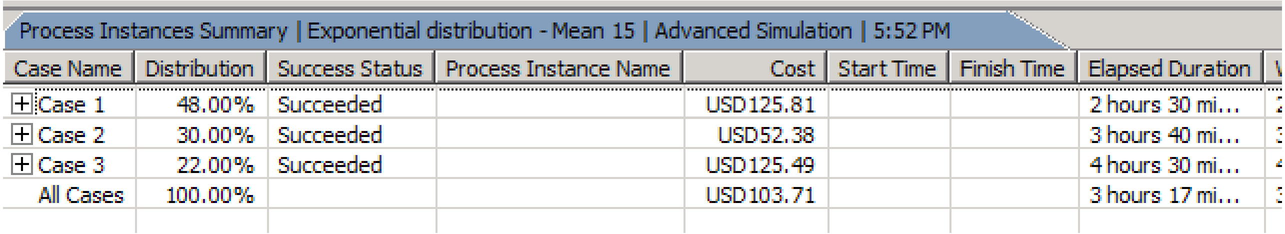
Analysis results display in the **Dynamic Analysis** pane:



Process Instances Summary | Exponential distribution - Mean 15 | Advanced Simulation | 5:52 PM

Case Name	Distribution	Success Status	Process Instance Name	Cost	Start Time	Finish Time	Elapsed Duration	V
⊞ Case 1	48.00%	Succeeded		USD125.81			2 hours 30 mi...	2
⊞ Case 2	30.00%	Succeeded		USD52.38			3 hours 40 mi...	3
⊞ Case 3	22.00%	Succeeded		USD125.49			4 hours 30 mi...	4
All Cases	100.00%			USD103.71			3 hours 17 mi...	3

__ 4. Expand the cases by clicking the (**+**) icon.

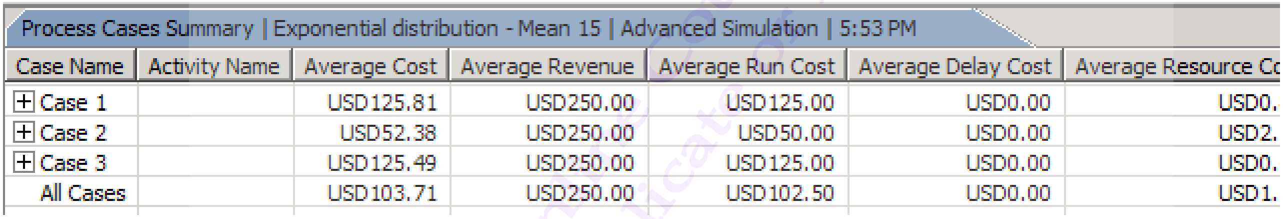
Additional process details, such as total cost, start time, and elapsed duration, are displayed.

__ 5. Right-click the results, and select **Close All.**

__ 6. Right-click the simulation result labeled **Exponential distribution - Mean 15** in the **Project Tree** and select **Dynamic Analysis —> Process Cases Analysis —> Process Cases Summary**.

__ 7. Select **All process instances** and click **Finish**.

Analysis results display in the **Dynamic Analysis** pane:



Process Cases Summary | Exponential distribution - Mean 15 | Advanced Simulation | 5:53 PM

Case Name	Activity Name	Average Cost	Average Revenue	Average Run Cost	Average Delay Cost	Average Resource Co
⊞ Case 1		USD125.81	USD250.00	USD125.00	USD0.00	USD0.
⊞ Case 2		USD52.38	USD250.00	USD50.00	USD0.00	USD2.
⊞ Case 3		USD125.49	USD250.00	USD125.00	USD0.00	USD0.
All Cases		USD103.71	USD250.00	USD102.50	USD0.00	USD1.

__ 8. Expand the cases by clicking the (**+**) icon.

Additional process details, such as average total cost and average elapsed duration, are displayed.

__ 9. Close the simulation editor.

Part 8: Setting probabilities of decision node

In this section, you will be adjusting the probability values in the **Accept Credit?** decision node of your process diagram. By default, the probabilities for "Yes" and "No" branches are each 50%. You will create a new simulation profile.

__ 1. From the Project Tree, right-click the **Credit Request** process and select **Simulate** from the context menu.

After the simulation snapshot has been created, a simulation editor opens and two new views appear in the bottom right pane: Simulation Attributes and Control Panel.

__ 2. In the **General** tab of the **Attributes** pane, click the **Edit** button next to **Process availability begins**.

__ 3. Set the value to `Monday, January 1, 2007 9:00:00 AM`

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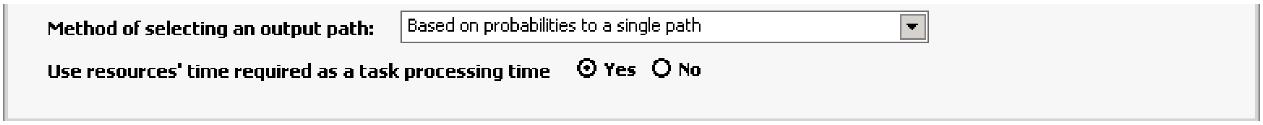
__ 4. Verify that `10` is defined as the **Random number seed**.

__ 5. At the bottom of the pane, verify that the **Method of selecting an output path** is **Based on probabilities to a single path**.



Method of selecting an output path: Based on probabilities to a single path

Use resources' time required as a task processing time ● Yes ○ No

__ 6. Click the **Inputs** tab.

__ 7. Set the **Total number of tokens** for `200`.

  a. Click **Edit** next to **Total number of tokens.**

  b. Enter `200` under **Specific value**.

  c. Click **OK.**

__ 8. Select the **Resource Pool** tab.

__ 9. Under the **Resource pool** field, scroll up to **Role**, clear the check box next to **Role**. This clears the check boxes for the **Approver**, **Data Entry**, and **Manager** roles.

__ 10. Save the simulation settings (Ctrl+S).

Part 9: Analyzing simulation statistics in control panel

For demonstration purposes, this exercise will assign the "Yes" branch a probability value of 100%. In most cases, this is illogical in actual practice because it would render the decision node useless.

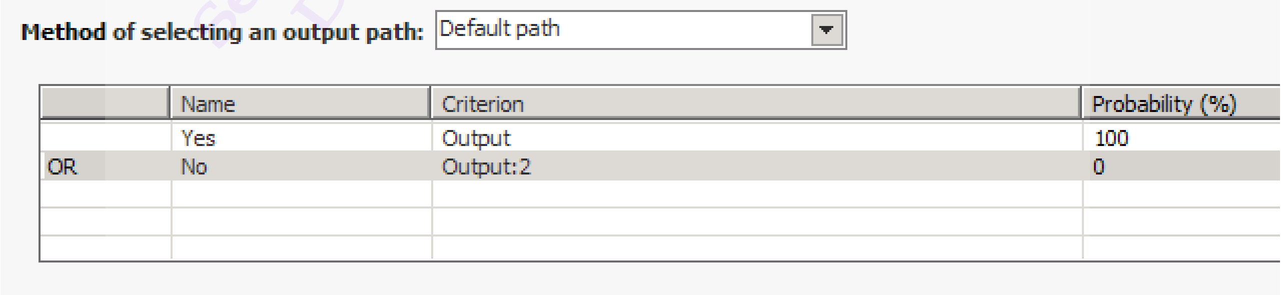
__ 1. From the simulation editor, click the **Accept Credit?** decision node.

__ 2. In the **Attributes** pane, click the **Output Logic** tab.

__ 3. Next to **Method of selecting an output path**, leave the value as **Default path**.

__ 4. Click the first row ("Yes" branch) under the **Probability (%)** column and change the value to `100`. Press Enter when you are finished.

__ 5. Similarly, change the probability value in the second row to `0`.



Method of selecting an output path: Default path

	Name	Criterion	Probability (%)
	Yes	Output	100
OR	No	Output:2	0

__ 6. Save your changes (Ctrl+S).

__ 7. Select the **Simulation Control Panel** tab and click the **Run simulation** button.

The results are displayed upon completion of the simulation.

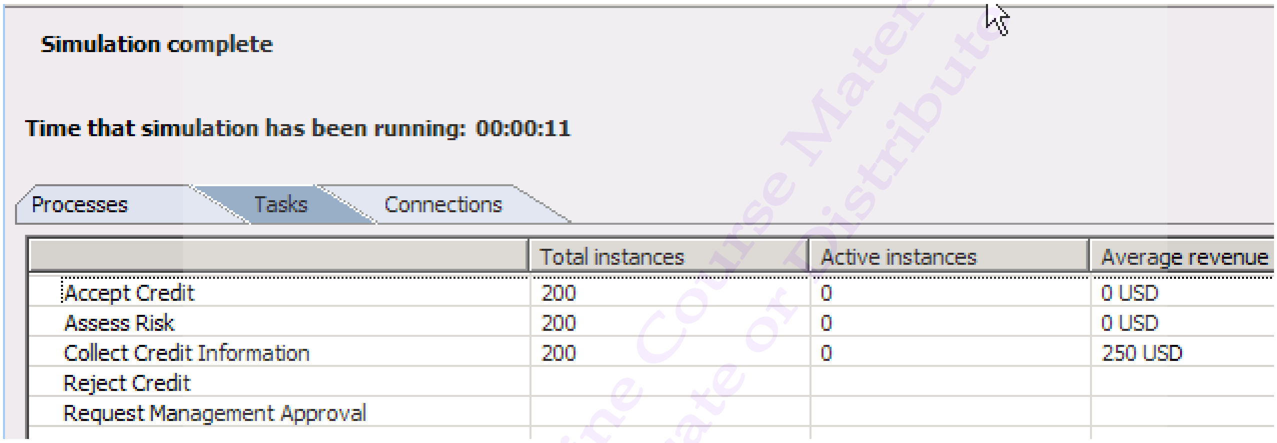
Review the results and note that **Total Revenue** for all simulation instances is **250 USD**. This indicates that every simulation instance executed the **Collect Credit Information** and **Accept Credit** task. These tasks, upon completion, generate a revenue of $250 USD.

__ 8. Click the **Collect and display statistics across process instances** check box to view generated statistics as averages for all process instances.

__ 9. Scroll to the right side of the table and note that **Average revenue** is **250 USD**.

This is consistent with the earlier observation that every simulation instance generated $250 USD.

__ 10. Select the **Tasks** tab to view statistics relating to tasks performed within each activation of a simulated process, including the current number of active instances of each task, and cumulative cost, revenue, and profit for each task.



Simulation complete

Time that simulation has been running: 00:00:11

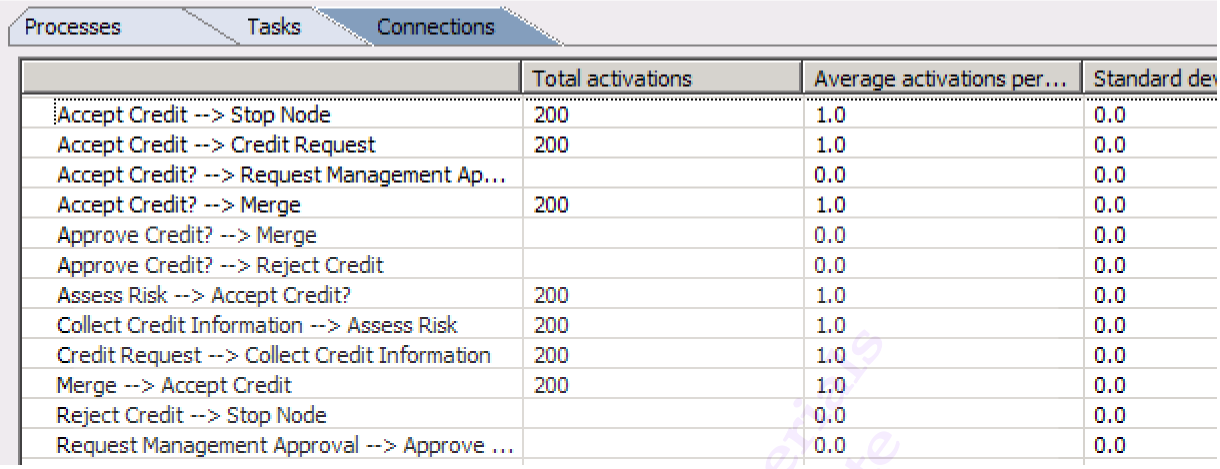
	Total instances	Active instances	Average revenue
Accept Credit	200	0	0 USD
Assess Risk	200	0	0 USD
Collect Credit Information	200	0	250 USD
Reject Credit			
Request Management Approval			

Note that all 200 simulated instances executed the **Accept Credit** task and that the **Reject Credit** and **Request Management Approval** tasks were never activated. The criterion you set in the **Approve Credit?** decision node did not allow any credit requests to be denied.

Also, note that the current number of active instances of each task is zero. This is the case because the simulation has completed.

Clearing the **Collect and display statistics across process instances** check box allows you to view simulation statistics specific to each process instance.

__ 11. Select the **Connections** tab to view the quantity of tokens transferred by each connection in the simulated process.



	Total activations	Average activations per...	Standard de
Accept Credit --> Stop Node	200	1.0	0.0
Accept Credit --> Credit Request	200	1.0	0.0
Accept Credit? --> Request Management Ap...		0.0	0.0
Accept Credit? --> Merge	200	1.0	0.0
Approve Credit? --> Merge		0.0	0.0
Approve Credit? --> Reject Credit		0.0	0.0
Assess Risk --> Accept Credit?	200	1.0	0.0
Collect Credit Information --> Assess Risk	200	1.0	0.0
Credit Request --> Collect Credit Information	200	1.0	0.0
Merge --> Accept Credit	200	1.0	0.0
Reject Credit --> Stop Node		0.0	0.0
Request Management Approval --> Approve ...		0.0	0.0

Note that the following connections were **not** activated because this was how you defined the path in the **Approve Credit?** decision node:

Accept Credit? —> Request Management Approval

Approve Credit? —> Reject Credit

Approve Credit? —> Merge

Reject Credit —> Stop Node

Request Management Approval —> Approve credit?

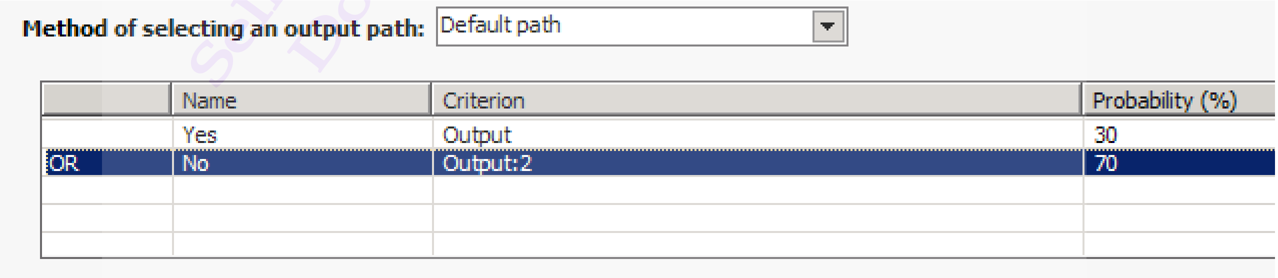
Part 10: Analyzing process instances

__ 1. From the simulation editor, click the **Accept Credit?** decision node.

__ 2. In the **Attributes** pane, click the **Output Logic** tab.

__ 3. Click the first row ("Yes" branch) under the **Probability (%)** column and change the value to `30`. Press Enter when you are finished.

__ 4. Similarly, change the value in the second row to `70`.



Method of selecting an output path: Default path

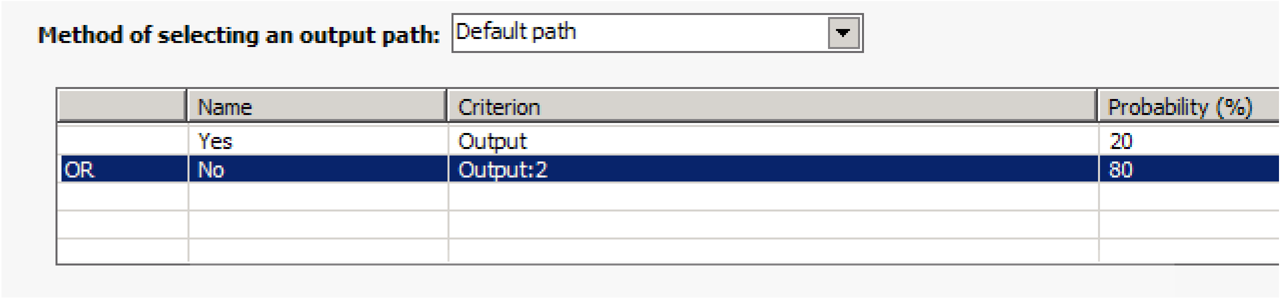
	Name	Criterion	Probability (%)
	Yes	Output	30
OR	No	Output:2	70

__ 5. From the simulation editor, click the **Approve Credit?** decision node.

__ 6. In the **Attributes** pane, click the **Output logic** tab.

__ 7. Click the first row ("Yes" branch) under the **Probability (%)** column and change the value to `20`. Press Enter when you are finished.

__ 8. Similarly, change the value in the second row to `80`.



Method of selecting an output path: Default path

	Name	Criterion	Probability (%)
	Yes	Output	20
OR	No	Output:2	80

__ 9. Save your changes (Ctrl+S).

__ 10. Select the **Simulation Control Panel** tab and click the **Run simulation** button.

The results are displayed upon completion of the simulation.

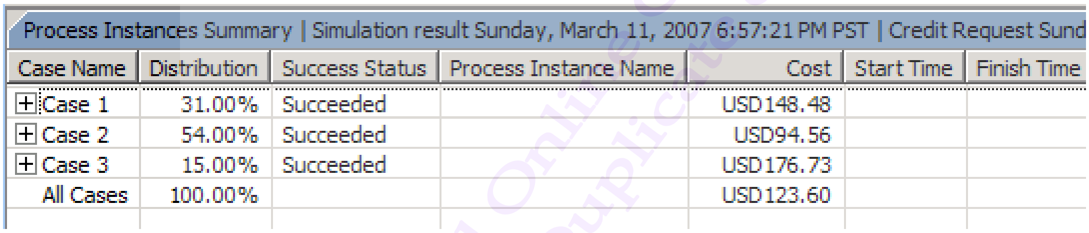
__ 11. From the **Project Tree**, right-click the most recent simulation result.

__ 12. Select **Dynamic Analysis —> Process Instances Summary** from the context menu.

__ 13. Select **All process instances** and click **Finish**.

__ 14. Click **Yes** if the **Path Signatures** dialog box appears.

Analysis results display in the **Dynamic Analysis** pane:



Process Instances Summary | Simulation result Sunday, March 11, 2007 6:57:21 PM PST | Credit Request Sund

Case Name	Distribution	Success Status	Process Instance Name	Cost	Start Time	Finish Time
⊞ Case 1	31.00%	Succeeded		USD148.48		
⊞ Case 2	54.00%	Succeeded		USD94.56		
⊞ Case 3	15.00%	Succeeded		USD176.73		
All Cases	100.00%			USD123.60		

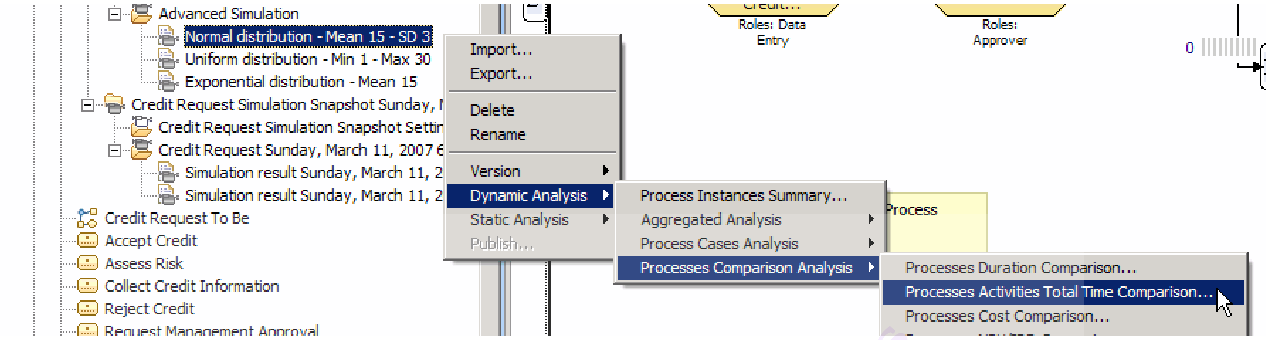
Note that the distribution for Case 1, is very close to the value you assigned (30%) for the "Yes" branch of the Accept Credit? decision node. Similarly, the combined value of cases 2 and 3 is roughly equivalent to the "No" branch (70% probability).

Part 11: Processes comparison analysis

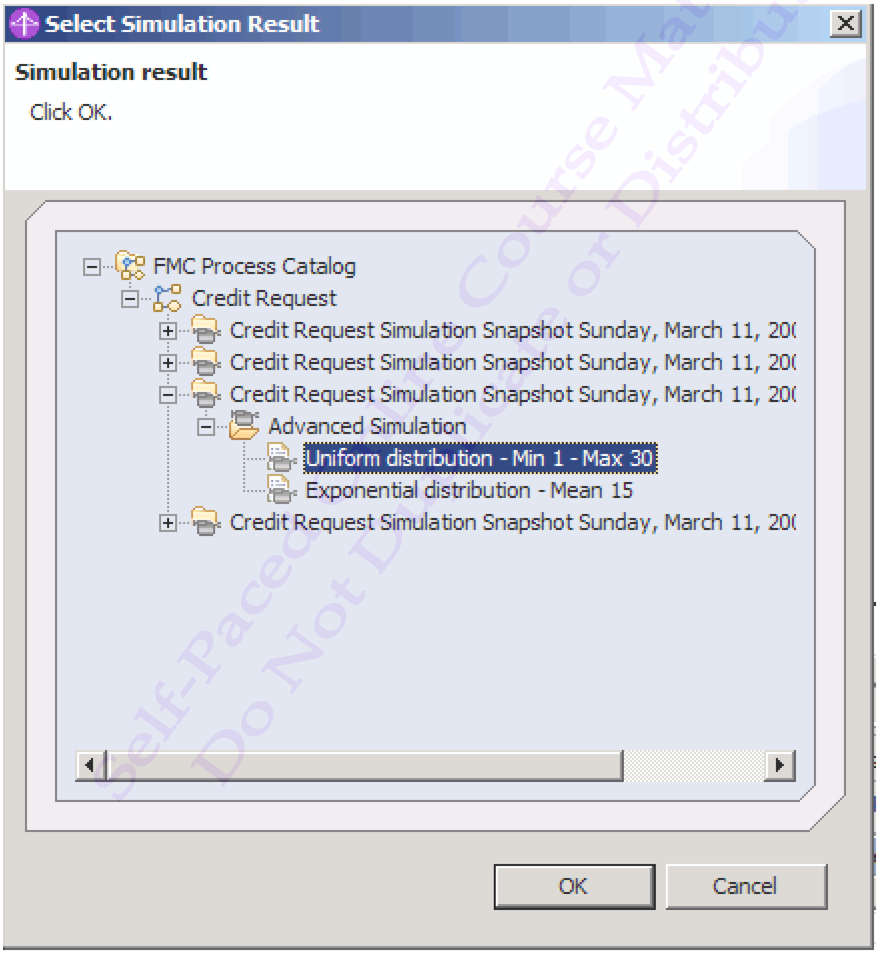
This section of the lab compares the simulation results of the uniform and normal distributions. You will run the Process Activities Total Time Comparison for the normal and uniform distributions:

__ 1. From the **Project Tree**, right-click the simulation result labeled **Normal distribution - Mean 15 - SD 3** and select **Dynamic Analysis —> Processes Comparison**

Analysis —> Processes Activities Total Time Comparison from the context menu.


Advanced Simulation
Normal distribution - Mean 15 - SD 3
Uniform distribution - Min 1 - Max 30
Exponential distribution - Mean 15
Credit Request Simulation Snapshot Sunday, I
Credit Request Simulation Snapshot Settir
Credit Request Sunday, March 11, 2007 6
Simulation result Sunday, March 11, 2
Simulation result Sunday, March 11, 2
Credit Request To Be
Accept Credit
Assess Risk
Collect Credit Information
Reject Credit
Request Management Approval
Import...
Export...
Delete
Rename
Version
Dynamic Analysis
Static Analysis
Publish...
Process Instances Summary...
Aggregated Analysis
Process Cases Analysis
Processes Comparison Analysis
Processes Duration Comparison...
Processes Activities Total Time Comparison...
Processes Cost Comparison...
Roles: Data Entry
Roles: Approver
Process
0

__ 2. From the Simulation result selection dialog box, select **FMC Process Catalog —> Credit Request —> Credit Request Simulation snapshot... —> Advanced Simulation —> Uniform distribution - Min 1 - Max 30**.



Simulation result

Click OK.

FMC Process Catalog
Credit Request
Credit Request Simulation Snapshot Sunday, March 11, 20(
Credit Request Simulation Snapshot Sunday, March 11, 20(
Credit Request Simulation Snapshot Sunday, March 11, 20(
Advanced Simulation
Uniform distribution - Min 1 - Max 30
Exponential distribution - Mean 15
Credit Request Simulation Snapshot Sunday, March 11, 20(
OK
Cancel

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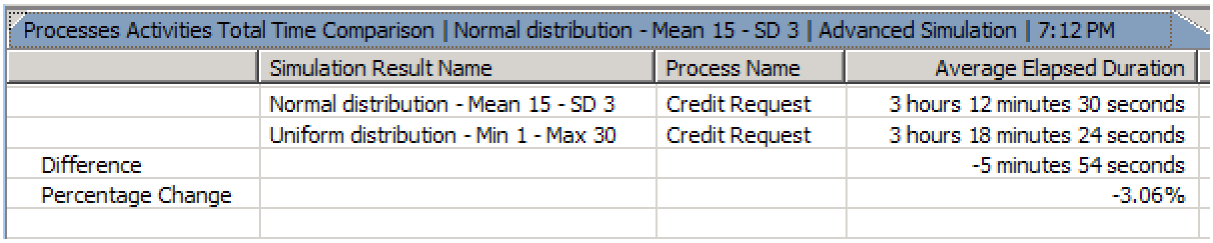
__ 3. Click **OK**.

__ 4. In the next screen, select **All process instances** and click **Finish**.

Analysis results display in the **Dynamic Analysis** pane:



Processes Activities Total Time Comparison | Normal distribution - Mean 15 - SD 3 | Advanced Simulation | 7:12 PM

	Simulation Result Name	Process Name	Average Elapsed Duration
	Normal distribution - Mean 15 - SD 3	Credit Request	3 hours 12 minutes 30 seconds
	Uniform distribution - Min 1 - Max 30	Credit Request	3 hours 18 minutes 24 seconds
Difference			-5 minutes 54 seconds
Percentage Change			-3.06%

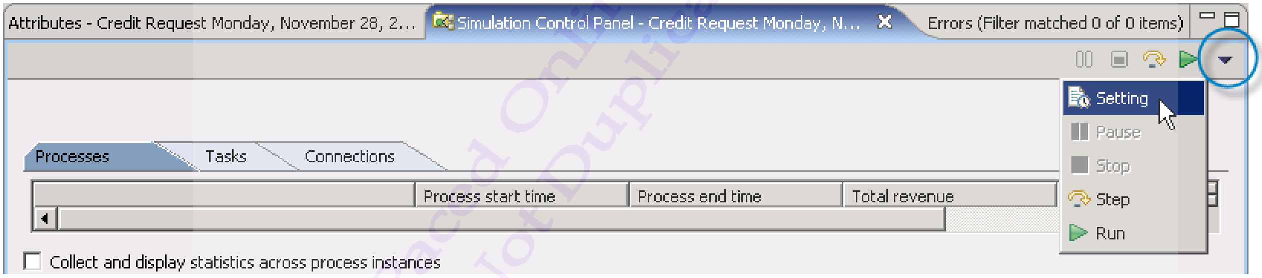
__ 5. Right-click the results, and select **Close All.**

Part 12: Specifying simulation replication settings

Simulation replication settings can be set to specify that a simulation should repeat itself consecutively for a specified number of times. If this option is enabled, the simulation repeats for as many replications as specified, and generates a simulation result for each completed replication.

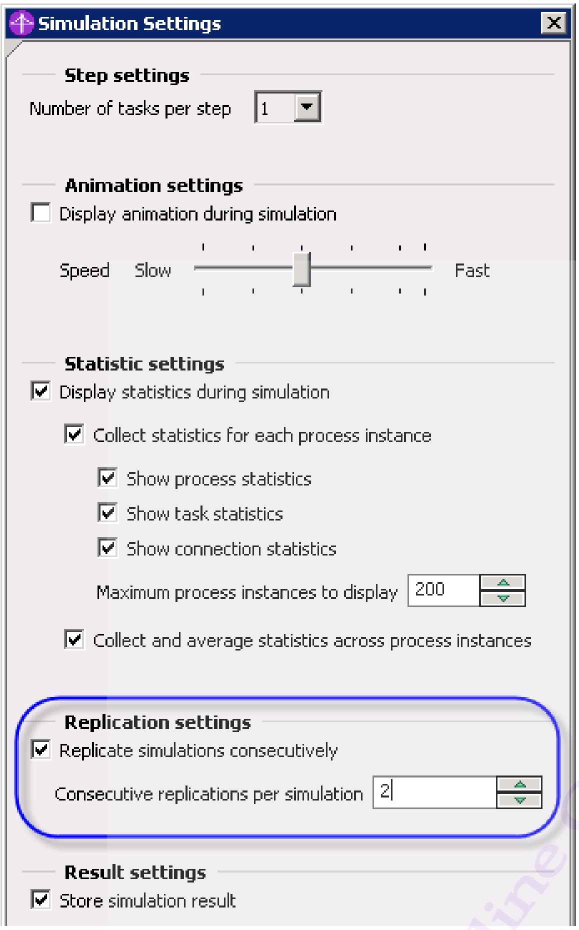
> **Note:** When consecutive replications are used, the random number seed is reset for each new simulation replication, based on the current date and time when the replication begins. The simulation results for each replication may therefore be different. The results of individual replications and the simulation run as a whole are not reproducible.

__ 1. From the **Simulation Control Panel**, click the **Menu** icon in the upper right corner and select **Setting**.


Attributes - Credit Request Monday, November 28, 2...
Simulation Control Panel - Credit Request Monday, N...
Errors (Filter matched 0 of 0 items)
Setting
Pause
Stop
Step
Run
Processes
Tasks
Connections
Process start time
Process end time
Total revenue
☐ Collect and display statistics across process instances

__ 2. Under **Replication settings**, click the check box next to **Replicate simulations consecutively**.

__ 3. Set the value **Consecutive replications per simulation** to `2`.



Simulation Settings

Step settings

Number of tasks per step: 1

Animation settings

☐ Display animation during simulation

Statistic settings

☑ Display statistics during simulation

  ☑ Collect statistics for each process instance

    ☑ Show process statistics

    ☑ Show task statistics

    ☑ Show connection statistics

    Maximum process instances to display: 200

  ☑ Collect and average statistics across process instances

Replication settings

☑ Replicate simulations consecutively

Consecutive replications per simulation: 2

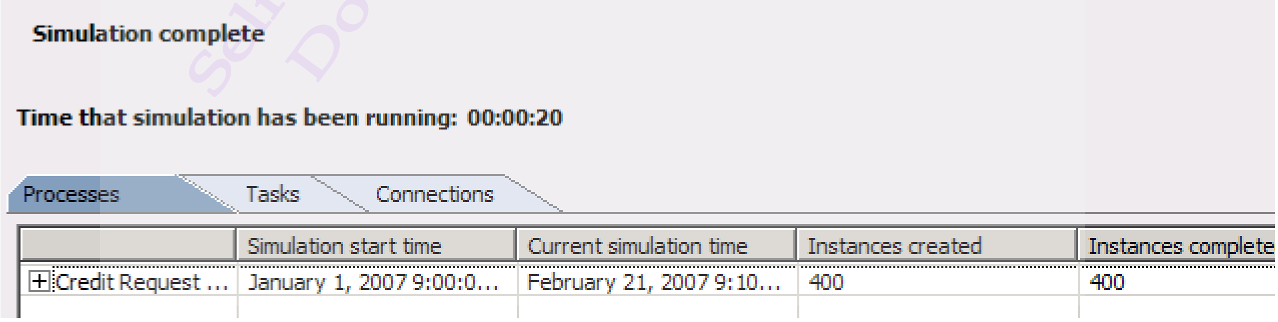
Result settings

☑ Store simulation result

__ 4. Click **OK**.

__ 5. Click **Run Simulation** to begin simulation.
The results are displayed upon completion of the simulation.

__ 6. Click the **Collect and display statistics across process instances** check box.
Notice that 400 instances have been created (generated by two replications of the simulation, each creating 200 instances).



Simulation complete

Time that simulation has been running: 00:00:20

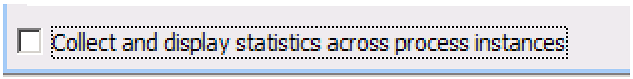
	Simulation start time	Current simulation time	Instances created	Instances complete
Credit Request ...	January 1, 2007 9:00:0...	February 21, 2007 9:10...	400	400

__ 7. Close the simulation editor.

Part 13: Running a process simulation with timetable trigger

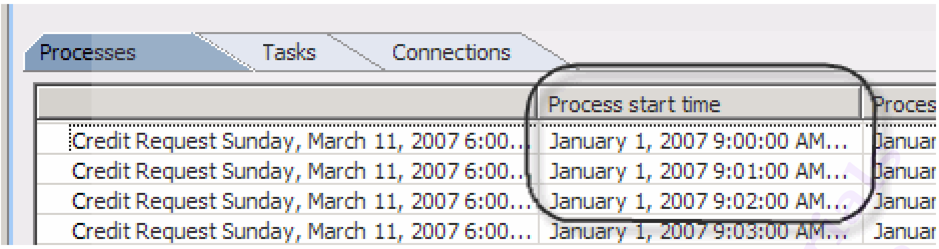
__ 1. Select the **Simulation Control Panel**.

__ 2. Clear the check box for **Collect and display statistics across process instances**.



☐ Collect and display statistics across process instances

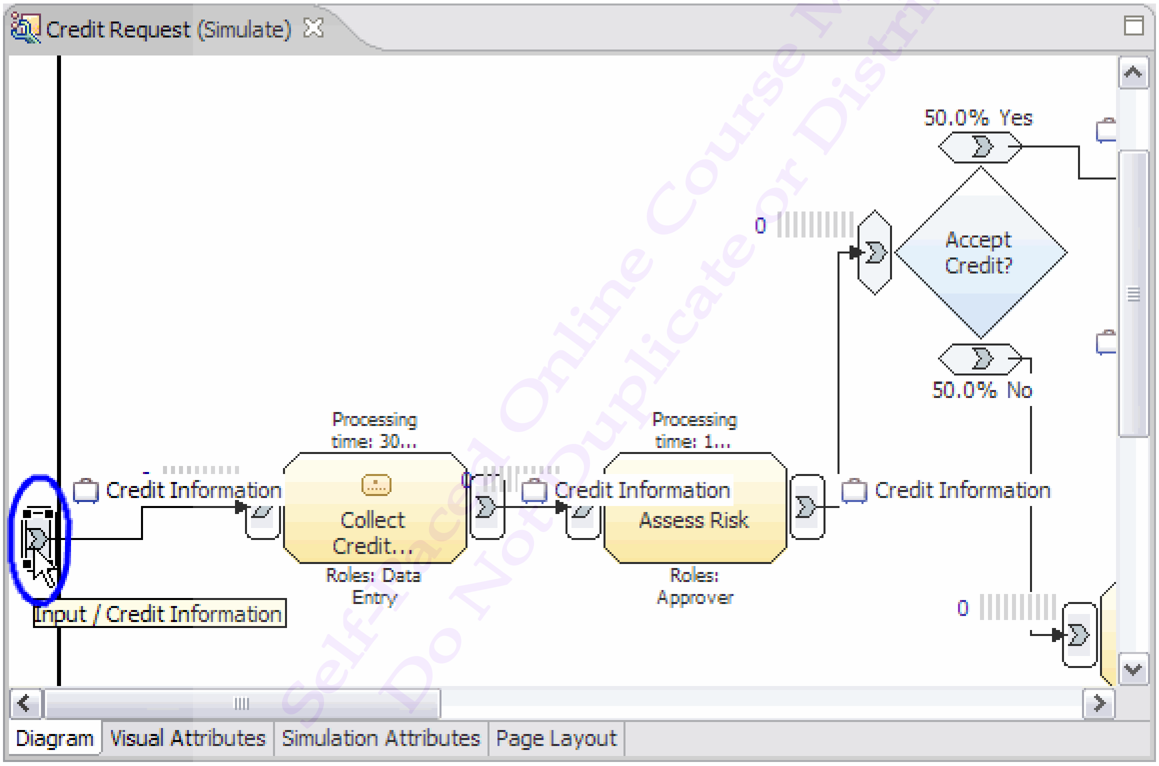
__ 3. In the **Process start time** column, note that the time interval between each process start time is one minute.



	Process start time	Proces
Credit Request Sunday, March 11, 2007 6:00...	January 1, 2007 9:00:00 AM...	Januar
Credit Request Sunday, March 11, 2007 6:00...	January 1, 2007 9:01:00 AM...	Januar
Credit Request Sunday, March 11, 2007 6:00...	January 1, 2007 9:02:00 AM...	Januar
Credit Request Sunday, March 11, 2007 6:00...	January 1, 2007 9:03:00 AM...	Januar

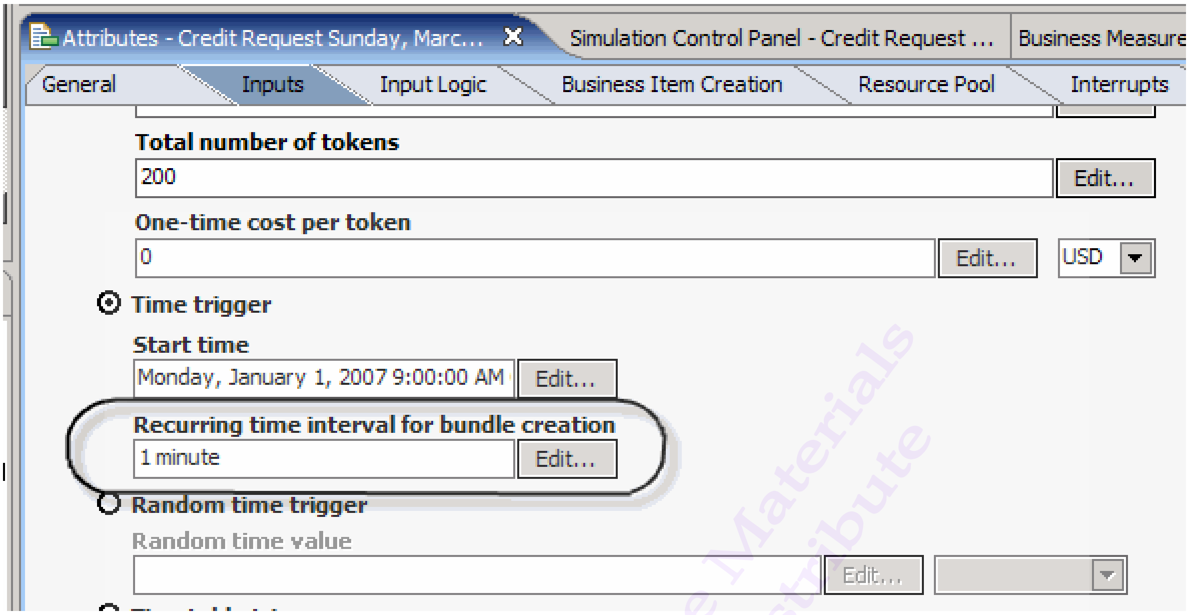
This was previously defined in the attributes of the process input for this simulation.

__ 4. In the process diagram, select the process input.



__ 5. Select the **Attributes - Input** tab.

__ 6. Under **Time trigger**, note that the value for **Recurring time interval for bundle creation** is **1 minute**.



Total number of tokens: 200

One-time cost per token: 0

● **Time trigger**

Start time: Monday, January 1, 2007 9:00:00 AM

Recurring time interval for bundle creation: 1 minute

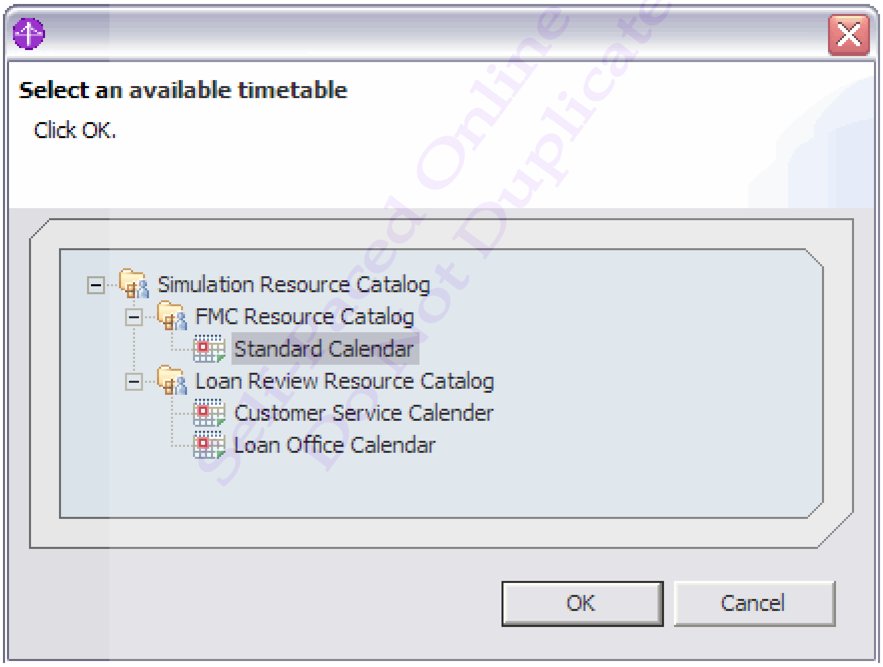
○ **Random time trigger**

Random time value

__ 7. Scroll down and select **Timetable trigger**.

__ 8. Click **Browse**.

__ 9. Select **Standard Calendar** and click **OK**.

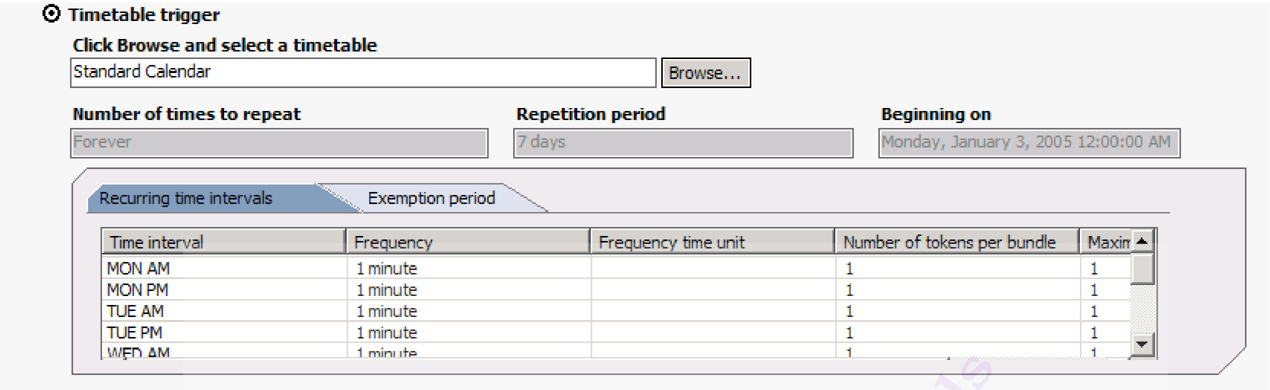


Select an available timetable

Click OK.

- Simulation Resource Catalog
  - FMC Resource Catalog
    - Standard Calendar
  - Loan Review Resource Catalog
    - Customer Service Calender
    - Loan Office Calendar

The **Timetable trigger** settings should look as follows:



⦿ **Timetable trigger**

Click Browse and select a timetable

Standard Calendar [Browse...]

Number of times to repeat: Forever

Repetition period: 7 days

Beginning on: Monday, January 3, 2005 12:00:00 AM

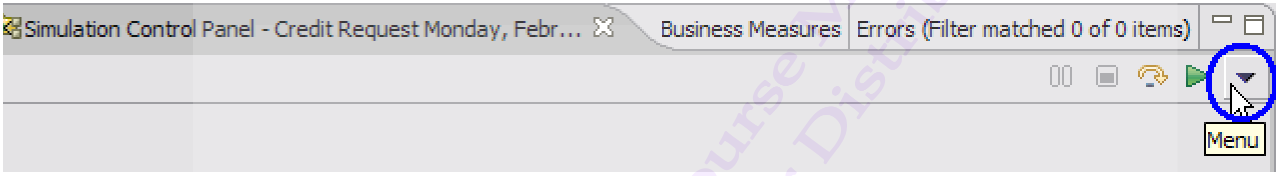
Recurring time intervals | Exemption period

Time interval	Frequency	Frequency time unit	Number of tokens per bundle	Maxim
MON AM	1 minute		1	1
MON PM	1 minute		1	1
TUE AM	1 minute		1	1
TUE PM	1 minute		1	1
WED AM	1 minute		1	1

__ 10. Save these settings (Ctrl+S).

__ 11. Select the **Simulation Control Panel** tab.

__ 12. At the top of the pane, click the **Menu** button and select **Setting**.

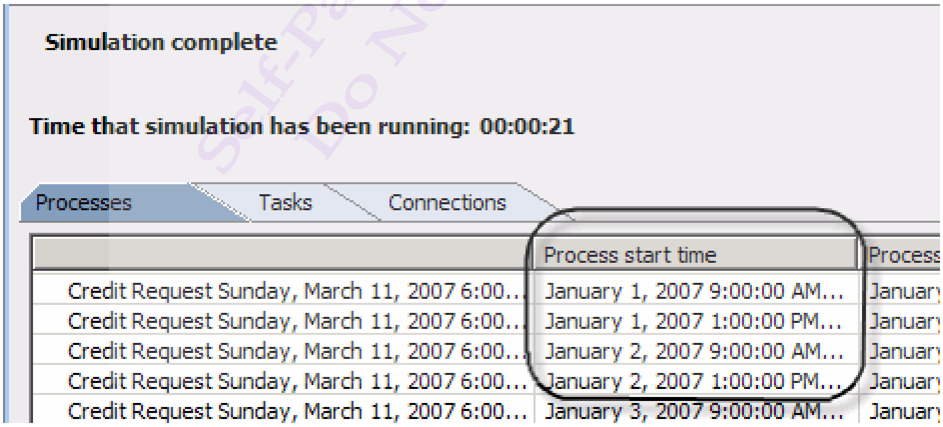

Simulation Control Panel - Credit Request Monday, Febr...
Business Measures
Errors (Filter matched 0 of 0 items)
Menu

__ 13. Under **Animation settings**, clear the check box next to **Display animation during simulation** and click **OK**.

Disabling animation during simulation significantly reduces the amount of time required to run the simulation. The simulation runs and produces simulation results that can be used for dynamic analysis, but does not show the transfer of tokens between process activities.

__ 14. In the **Simulation Control Panel**, click the **Run Simulation** (▶) button.

__ 15. Examine the simulation results.



Simulation complete

Time that simulation has been running: 00:00:21

Processes | Tasks | Connections

	Process start time	Process
Credit Request Sunday, March 11, 2007 6:00...	January 1, 2007 9:00:00 AM...	January
Credit Request Sunday, March 11, 2007 6:00...	January 1, 2007 1:00:00 PM...	January
Credit Request Sunday, March 11, 2007 6:00...	January 2, 2007 9:00:00 AM...	January
Credit Request Sunday, March 11, 2007 6:00...	January 2, 2007 1:00:00 PM...	January
Credit Request Sunday, March 11, 2007 6:00...	January 3, 2007 9:00:00 AM...	January

Note that the start time for each process is based on the **Standard Calendar** timetable from the Project Tree.

__ 16. Exit Modeler.

Part 14: Review questions

Your instructor will review the following questions with you.

__ 1. What is the advantage of using statistical distributions in simulation?

__ 2. Where are probability distributions used in the Modeler?

__ 3. Which distribution assigns a constant probability for all values?

__ 4. What are the restrictions when using token creation based on a periodic timetable?

END OF EXERCISE

Exercise 7. Process improvement

What this exercise is about

This lab covers advanced goal analysis and process improvement.

What you should be able to do

At the end of the lab, you should be able to:

- Redesign process model
- Conduct goal analysis
- Conduct comparison analysis

Requirements

Previous labs should be completed successfully.

Exercise instructions

Part 1: Opening workspace

__ 1. To launch Modeler, click **Start —> Programs —> IBM WebSphere —> Business Modeler**.

__ 2. Browse to **C:\ClassWorkspaces\ProcessImprovementLab**.

__ 3. Click **OK**.

Part 2: Setting up for simulation

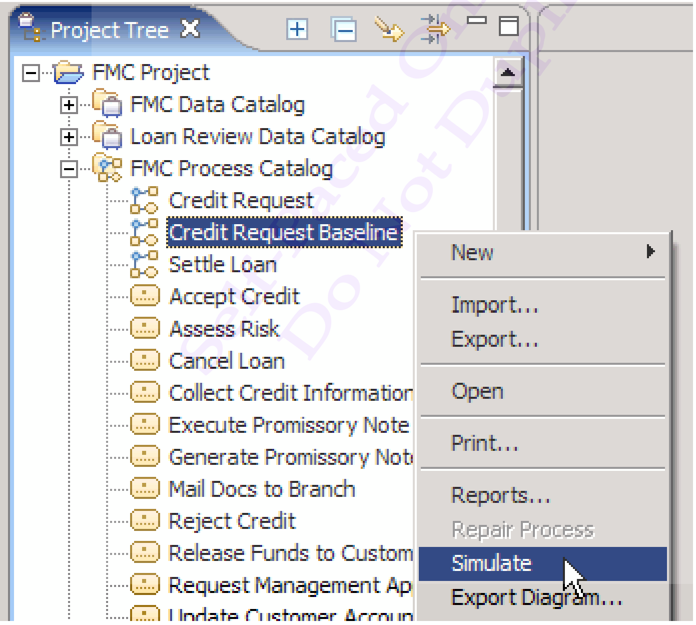
Simulation is a faster-than-real-time performance of a process in a virtual environment. Simulation enables organizations to observe how a process will perform in response to variations of inputs to the process, just as in a real-life work environment. Simulation also provides the ability to vary process input volume over time by adjusting resources and current allocations. Simulation output provides detailed information regarding resource utilization levels and the results of cost and cycle-time calculations.

Now you will conduct analysis from the baseline model, and you will rename the To Be model as the baseline. Rename the **Credit Request To Be** to **Credit Request Baseline**.

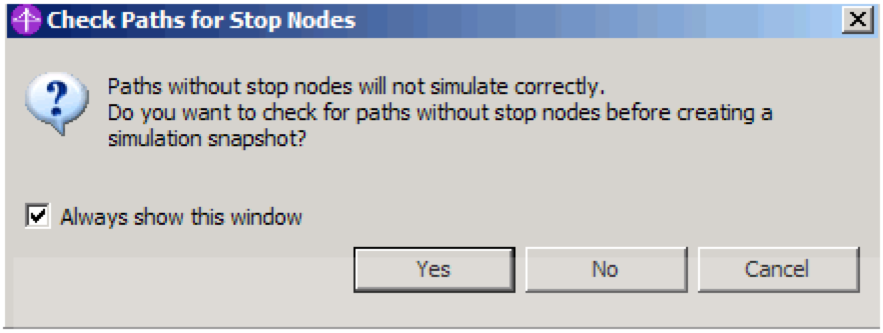
__ 1. From the Project Tree, right-click **FMC Project —> FMC Process Catalog —> Credit Request To Be**, and select **Rename**.

__ 2. Change the process name to `Credit Request Baseline`.

__ 3. Right-click **Credit Request Baseline** and Select **Simulate**.



__ 4. Click **Yes** if the following window appears.

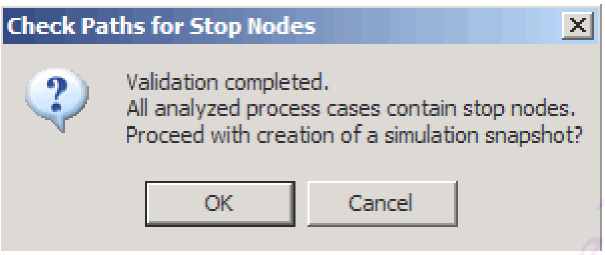


Check Paths for Stop Nodes

Paths without stop nodes will not simulate correctly.
Do you want to check for paths without stop nodes before creating a simulation snapshot?

☑ Always show this window

__ 5. Click **OK** if the following window appears.



Check Paths for Stop Nodes

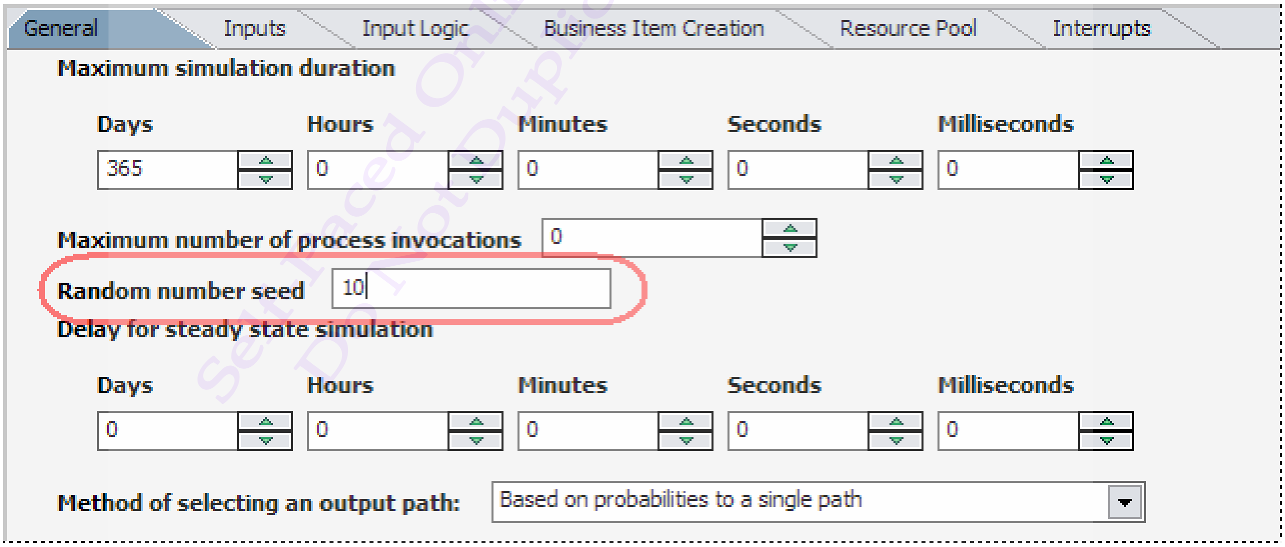
Validation completed.
All analyzed process cases contain stop nodes.
Proceed with creation of a simulation snapshot?

After the simulation snapshot has been created, a simulation editor opens.

The **Credit Request Baseline (Simulate)** diagram opens on the right pane.

__ 6. Click the background of the **Credit Request Baseline (Simulate)** diagram and refer to the **Attributes** pane to view the attributes for the process.

__ 7. In the **General** tab of the **Attributes** pane, set **Random number seed** to 10.



Maximum simulation duration

Days	Hours	Minutes	Seconds	Milliseconds
365	0	0	0	0

Maximum number of process invocations 0

Random number seed 10

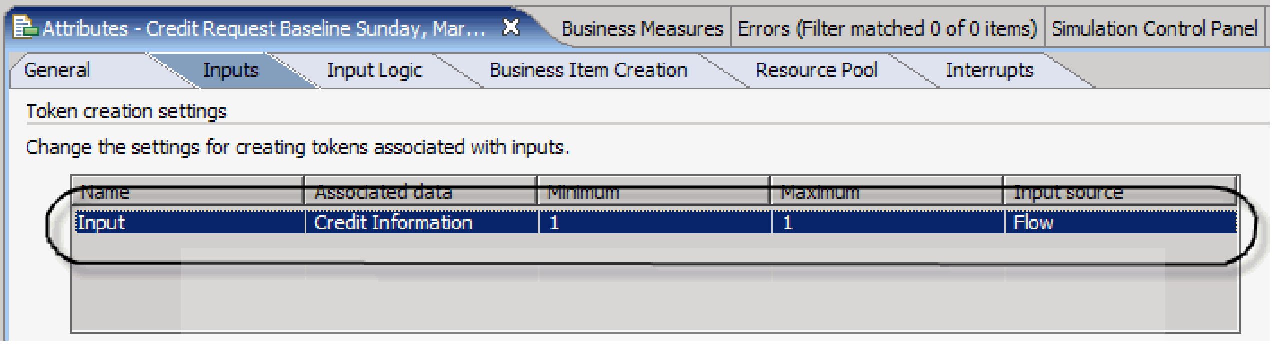
Delay for steady state simulation

Days	Hours	Minutes	Seconds	Milliseconds
0	0	0	0	0

Method of selecting an output path: Based on probabilities to a single path

__ 8. Select the **Inputs** tab.

__ 9. Click the input row under the **Token creation** settings.



Token creation settings

Change the settings for creating tokens associated with inputs.

Name	Associated data	Minimum	Maximum	Input source
Input	Credit Information	1	1	Flow

__ 10. Scroll down to change the value for **Total number of tokens** (found below the table) to `10`.

__ 11. Under **Time Trigger**, change the **Start time** to `Monday, January 1, 2007 at 8:00:00 a.m.` on the upcoming Monday by clicking **Edit**.

__ 12. Click the **Resource Pool** tab.

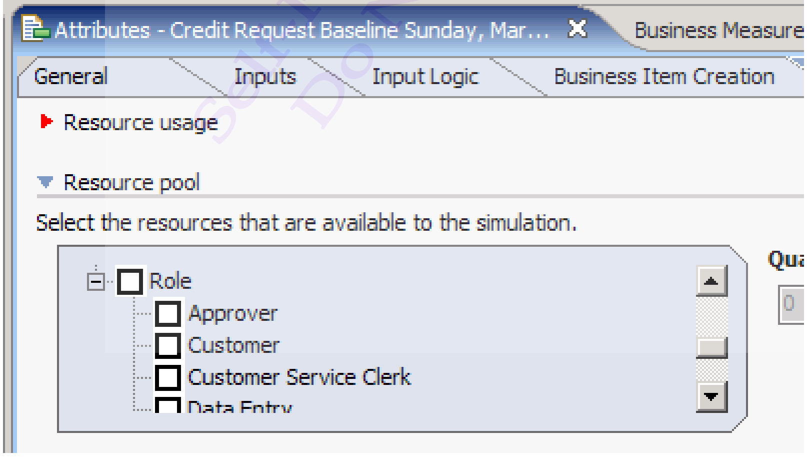
Resource pool is where you can specify the resources that will be made available to a process during a process simulation.

A resource can be a person, equipment, or material used to perform a task or a project. Each resource is a particular occurrence or example of a resource definition. If you have a resource definition called Service Vehicle, an example of a resource would be Service Vehicle #3.

Roles are the actions, authorities, and qualifications assigned to or expected of a person or group. For example, an employee resource could have the role of customer service representative, supervisor, or manager.

__ 13. Under **Resource pool**, scroll up to **Role** and clear the check box next to **Role**.

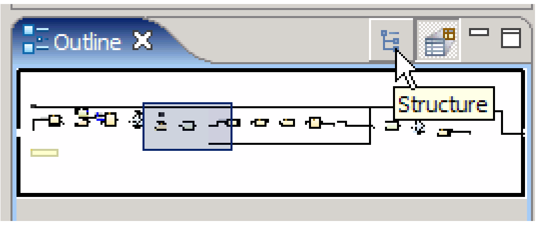
You need to clear the check box next to **Role** because you want to run the simulation using only the resources available, not roles.



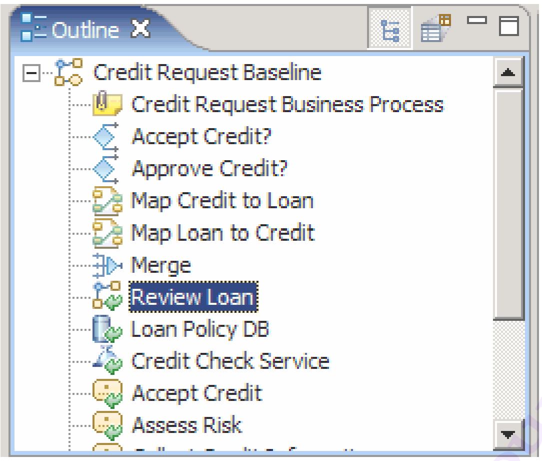
Select the resources that are available to the simulation.

☐ Role
☐ Approver
☐ Customer
☐ Customer Service Clerk
☐ Data Entry

__ 14. Go to the Outline pane and click the **structure** button.

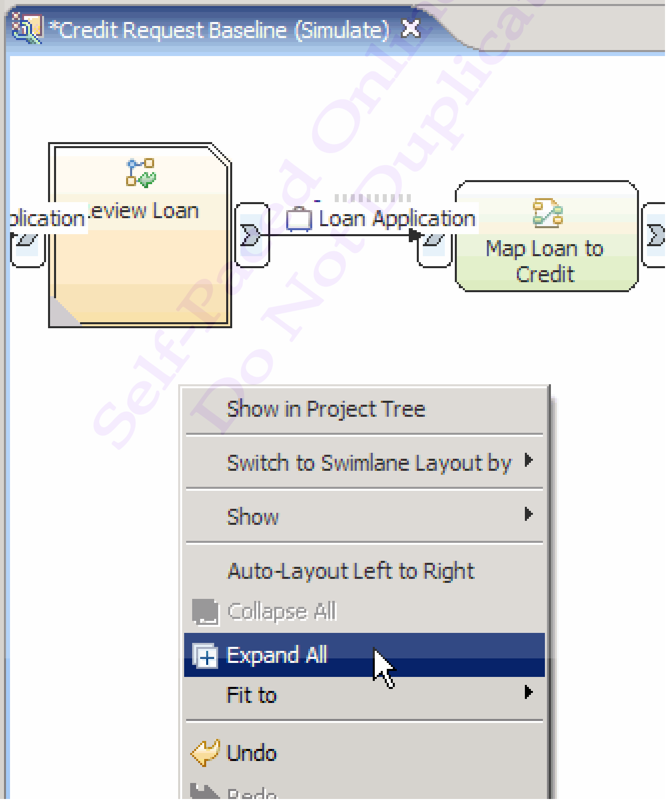


__ 15. Double-click **Review Loan** from the list.

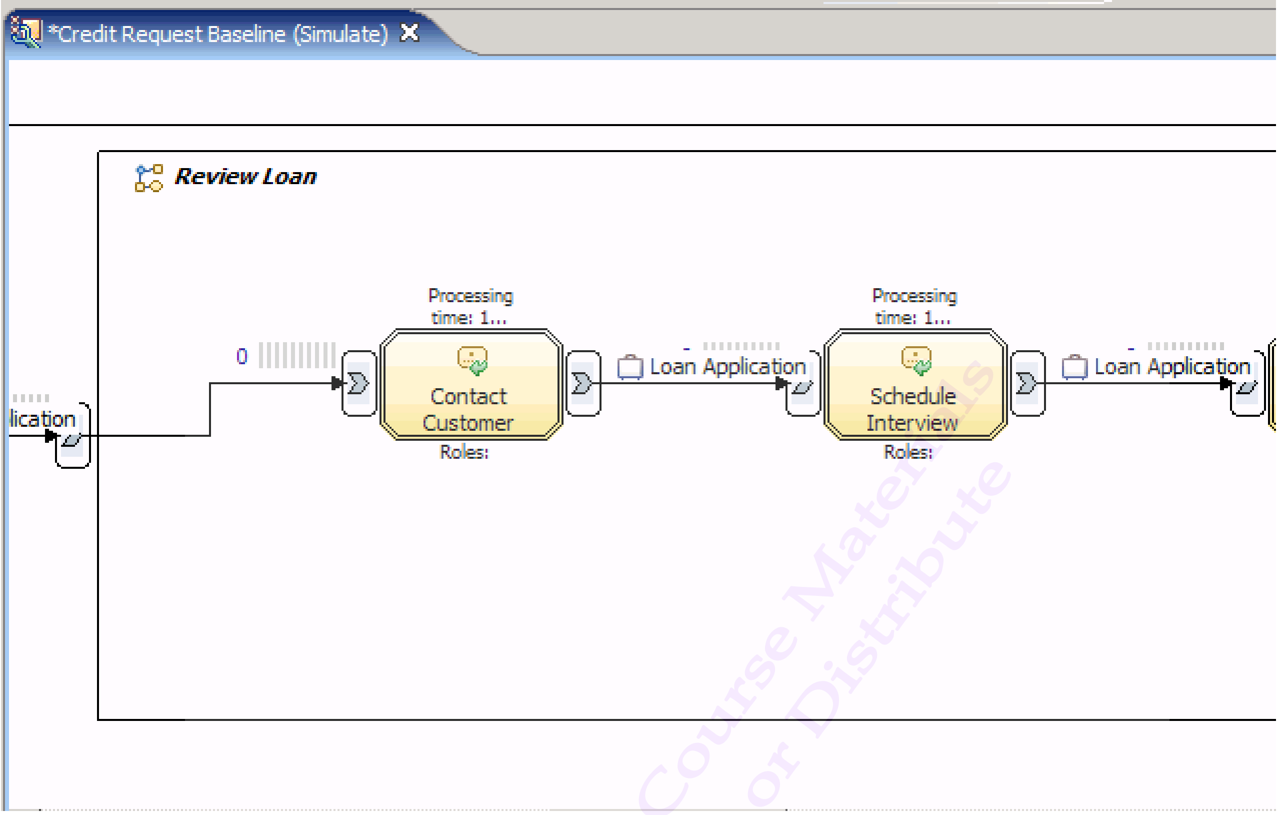


Credit Request Baseline
- Credit Request Business Process
- Accept Credit?
- Approve Credit?
- Map Credit to Loan
- Map Loan to Credit
- Merge
- Review Loan
- Loan Policy DB
- Credit Check Service
- Accept Credit
- Assess Risk

__ 16. To define the task durations inside the subprocess **Review Loan**, right-click the back ground of the diagram and select **Expand All**.



The **Review Loan** subprocess is expanded.



__ 17. Change the processing time in durations of the tasks inside the subprocess by first click a task, then change the time by selecting **Duration** tab in **Attributes**.

Review loan:

Contact Customer: `15 minutes`

Schedule Interview: `15 minutes`

Conduct Interview: `1 hour`

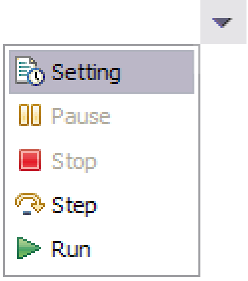
Document Interview: `1 hour`

__ 18. Save your work (Ctrl+S).

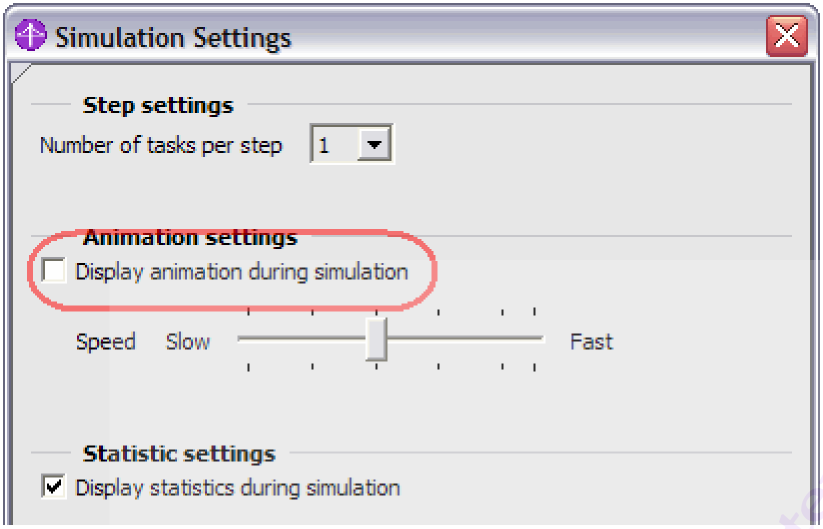
Part 3: Running the simulation and generating analysis

__ 1. Click the **Simulation Control Panel** tab.

__ 2. Click the **Menu** button in the upper right corner, and select **Setting**.



__ 3. Clear the box next to **Display animation during simulation**, and click **OK.**



Simulation Settings

Step settings

Number of tasks per step: 1

Animation settings

☐ Display animation during simulation

Speed: Slow – Fast

Statistic settings

☑ Display statistics during simulation

__ 4. Click **Run** from the simulation control panel.

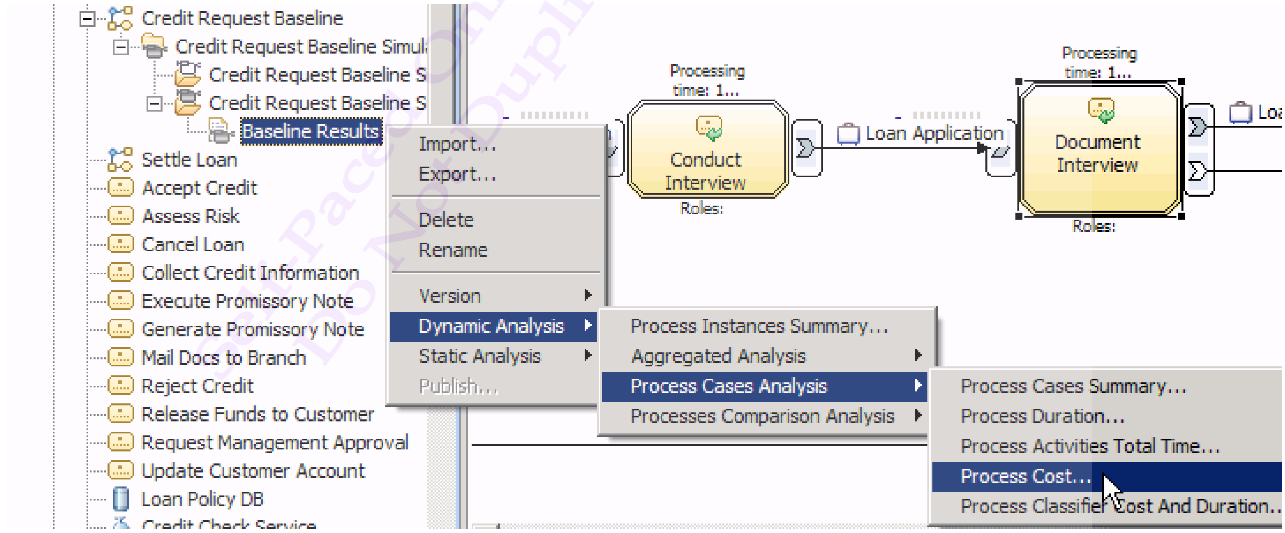
It will take a few seconds for the simulation to be completed.

Once the simulation is completed, you will see the simulation results.

__ 5. From the Project Tree, right-click the simulation result that was just created, and select **Rename**. Enter `Baseline Results` as the new name.

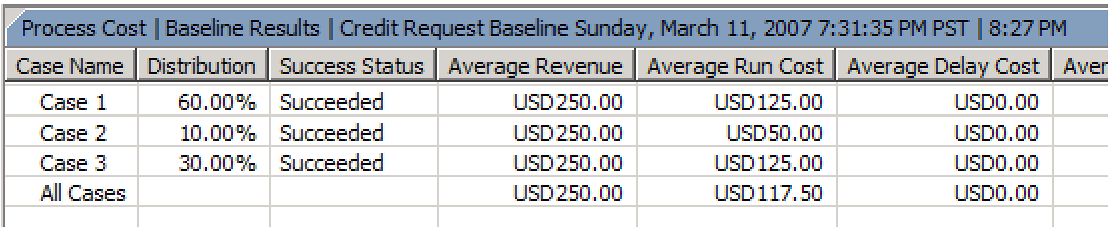
Now, based on the simulation results, you will generate the dynamic analysis.

__ 6. Right-click **Baseline Results** from the Project Tree and select **Dynamic Analysis —> Process Cases Analysis —> Process Cost**.



__ 7. Select **All process instances** and click **Finish**.

__ 8. The **Process Cost** analysis view appears:



Process Cost | Baseline Results | Credit Request Baseline Sunday, March 11, 2007 7:31:35 PM PST | 8:27 PM

Case Name	Distribution	Success Status	Average Revenue	Average Run Cost	Average Delay Cost	Aver
Case 1	60.00%	Succeeded	USD250.00	USD125.00	USD0.00	
Case 2	10.00%	Succeeded	USD250.00	USD50.00	USD0.00	
Case 3	30.00%	Succeeded	USD250.00	USD125.00	USD0.00	
All Cases			USD250.00	USD117.50	USD0.00	

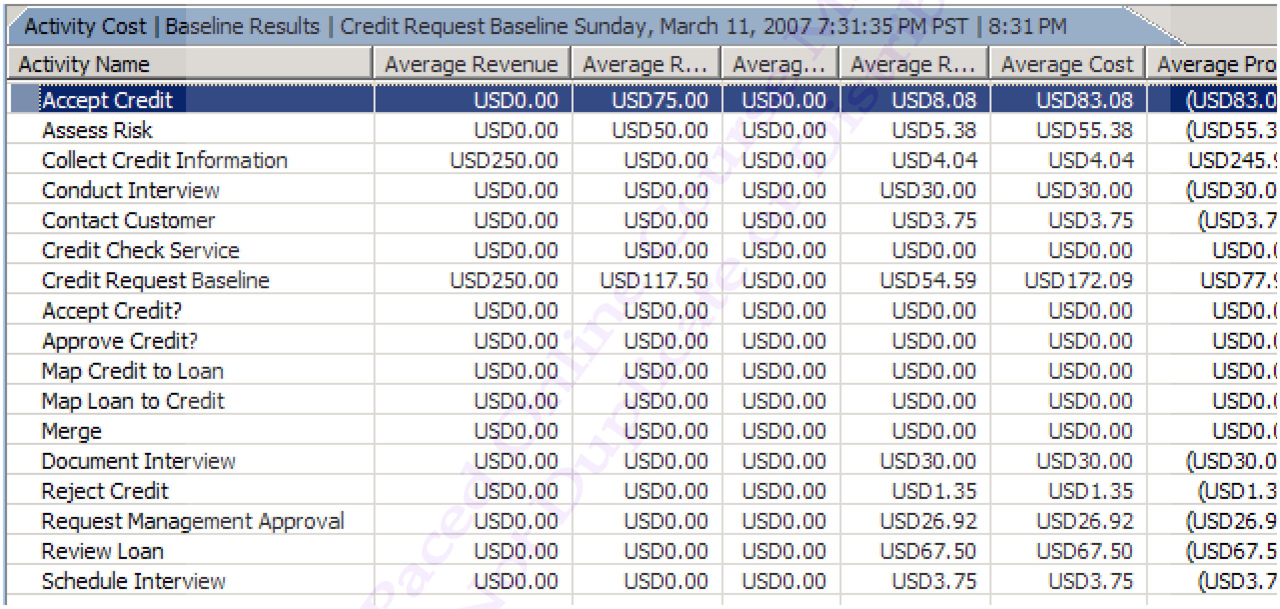
__ 9. Based on the dynamic analysis that you have just completed, answer the following:

The average cost (last column of the right) for all cases is $____________.

__ 10. Right-click the **Dynamic Analysis** tab and select **Close**.

__ 11. Right-click **Baseline Results**, and select **Dynamic Analysis —> Aggregated Analysis —> Activity Cost**.

The **Activity Cost** analysis view appears:



Activity Cost | Baseline Results | Credit Request Baseline Sunday, March 11, 2007 7:31:35 PM PST | 8:31 PM

Activity Name	Average Revenue	Average R...	Averag...	Average R...	Average Cost	Average Pro
Accept Credit	USD0.00	USD75.00	USD0.00	USD8.08	USD83.08	(USD83.0
Assess Risk	USD0.00	USD50.00	USD0.00	USD5.38	USD55.38	(USD55.3
Collect Credit Information	USD250.00	USD0.00	USD0.00	USD4.04	USD4.04	USD245.
Conduct Interview	USD0.00	USD0.00	USD0.00	USD30.00	USD30.00	(USD30.0
Contact Customer	USD0.00	USD0.00	USD0.00	USD3.75	USD3.75	(USD3.7
Credit Check Service	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.
Credit Request Baseline	USD250.00	USD117.50	USD0.00	USD54.59	USD172.09	USD77.
Accept Credit?	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.
Approve Credit?	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.
Map Credit to Loan	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.
Map Loan to Credit	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.
Merge	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.
Document Interview	USD0.00	USD0.00	USD0.00	USD30.00	USD30.00	(USD30.0
Reject Credit	USD0.00	USD0.00	USD0.00	USD1.35	USD1.35	(USD1.3
Request Management Approval	USD0.00	USD0.00	USD0.00	USD26.92	USD26.92	(USD26.9
Review Loan	USD0.00	USD0.00	USD0.00	USD67.50	USD67.50	(USD67.5
Schedule Interview	USD0.00	USD0.00	USD0.00	USD3.75	USD3.75	(USD3.7

__ 12. Based on the dynamic analysis that you have just completed,

List the top three most expensive activities (tasks or processes) as follows:

a.) Activity ________________________________ Cost $___________________

b.) Activity ________________________________ Cost $___________________

c.) Activity ________________________________ Cost $___________________

__ 13. Right-click the **Dynamic Analysis** tab and select **Close**.

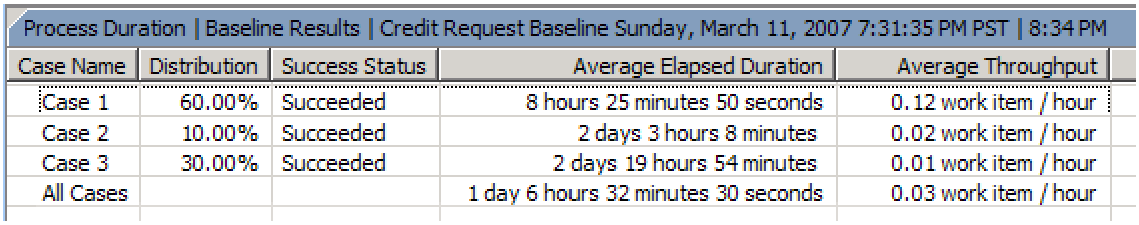
__ 14. Right-click **Baseline Results** from the Project Tree and select **Dynamic Analysis —> Process Cases Analysis —> Process Duration**.

__ 15. Select **All process instances**.

__ 16. Click **Finish**.

__ 17. Click **Yes** if the **Path Signatures** dialog box appears.

The **Process Duration** analysis view appears.



Process Duration | Baseline Results | Credit Request Baseline Sunday, March 11, 2007 7:31:35 PM PST | 8:34 PM

Case Name	Distribution	Success Status	Average Elapsed Duration	Average Throughput
Case 1	60.00%	Succeeded	8 hours 25 minutes 50 seconds	0.12 work item / hour
Case 2	10.00%	Succeeded	2 days 3 hours 8 minutes	0.02 work item / hour
Case 3	30.00%	Succeeded	2 days 19 hours 54 minutes	0.01 work item / hour
All Cases			1 day 6 hours 32 minutes 30 seconds	0.03 work item / hour

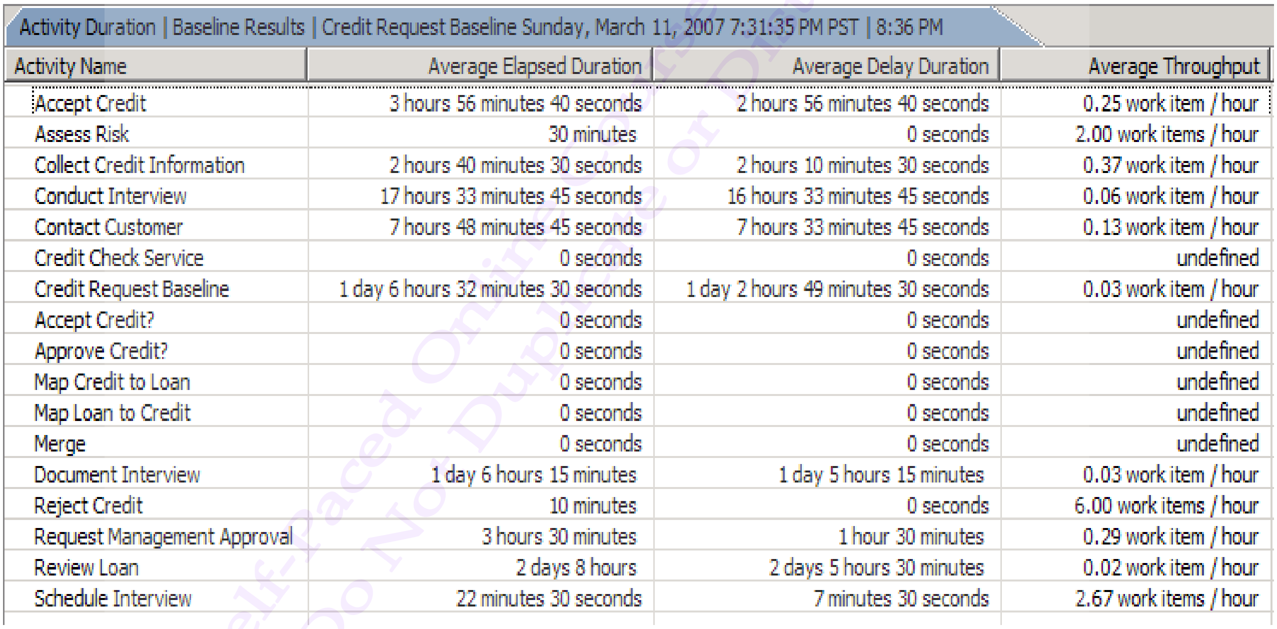
__ 18. Based on the dynamic analysis you have just completed, answer the following:

The weighted average total process duration is ______________________.

Now, you will focus on the activity duration and cost to find out which task takes the longest time and costs the most by generating the activity analysis.

__ 19. Right-click **Baseline Results** from the Project Tree and select **Dynamic Analysis —> Aggregated Analysis —> Activity Duration**.

The **Activity Duration** analysis view appears:



Activity Duration | Baseline Results | Credit Request Baseline Sunday, March 11, 2007 7:31:35 PM PST | 8:36 PM

Activity Name	Average Elapsed Duration	Average Delay Duration	Average Throughput
Accept Credit	3 hours 56 minutes 40 seconds	2 hours 56 minutes 40 seconds	0.25 work item / hour
Assess Risk	30 minutes	0 seconds	2.00 work items / hour
Collect Credit Information	2 hours 40 minutes 30 seconds	2 hours 10 minutes 30 seconds	0.37 work item / hour
Conduct Interview	17 hours 33 minutes 45 seconds	16 hours 33 minutes 45 seconds	0.06 work item / hour
Contact Customer	7 hours 48 minutes 45 seconds	7 hours 33 minutes 45 seconds	0.13 work item / hour
Credit Check Service	0 seconds	0 seconds	undefined
Credit Request Baseline	1 day 6 hours 32 minutes 30 seconds	1 day 2 hours 49 minutes 30 seconds	0.03 work item / hour
Accept Credit?	0 seconds	0 seconds	undefined
Approve Credit?	0 seconds	0 seconds	undefined
Map Credit to Loan	0 seconds	0 seconds	undefined
Map Loan to Credit	0 seconds	0 seconds	undefined
Merge	0 seconds	0 seconds	undefined
Document Interview	1 day 6 hours 15 minutes	1 day 5 hours 15 minutes	0.03 work item / hour
Reject Credit	10 minutes	0 seconds	6.00 work items / hour
Request Management Approval	3 hours 30 minutes	1 hour 30 minutes	0.29 work item / hour
Review Loan	2 days 8 hours	2 days 5 hours 30 minutes	0.02 work item / hour
Schedule Interview	22 minutes 30 seconds	7 minutes 30 seconds	2.67 work items / hour

__ 20. Based on the dynamic analysis that you have just completed, list the top three (3) activities (tasks and processes) which have the longest average elapsed duration as follows:

a.) Activity ________________________________ Duration ___________________.

b.) Activity ________________________________ Duration ___________________.

c.) Activity ________________________________ Duration ___________________.

__ 21. Right-click the **Dynamic Analysis** tab and select **Close**.

__ 22. Close the **Credit Request Baseline (Simulate)** window at top.

Part 4: Redesigning the Model

When reviewing the baseline results, there are many areas that you can focus to improve, such as resource allocation, resource availability, and so on. In this exercise, you will focus on redesigning the subprocess called **Review Loan**. To reduce the time and cost of the **Review Loan** subprocess, you will redesign the process by adding a decision to determine if the customer is able to provide the supporting documents like employment verification, income verification, tax forms, and so forth. If customer is able to provide them, it will omit the interview process and go through a new task called Review Support Doc task, which takes 15 minutes. This will greatly reduce the human resource cost and idle time to process the loan.

__ 1. Make a copy of the **Review Loan** process from the Project Tree:

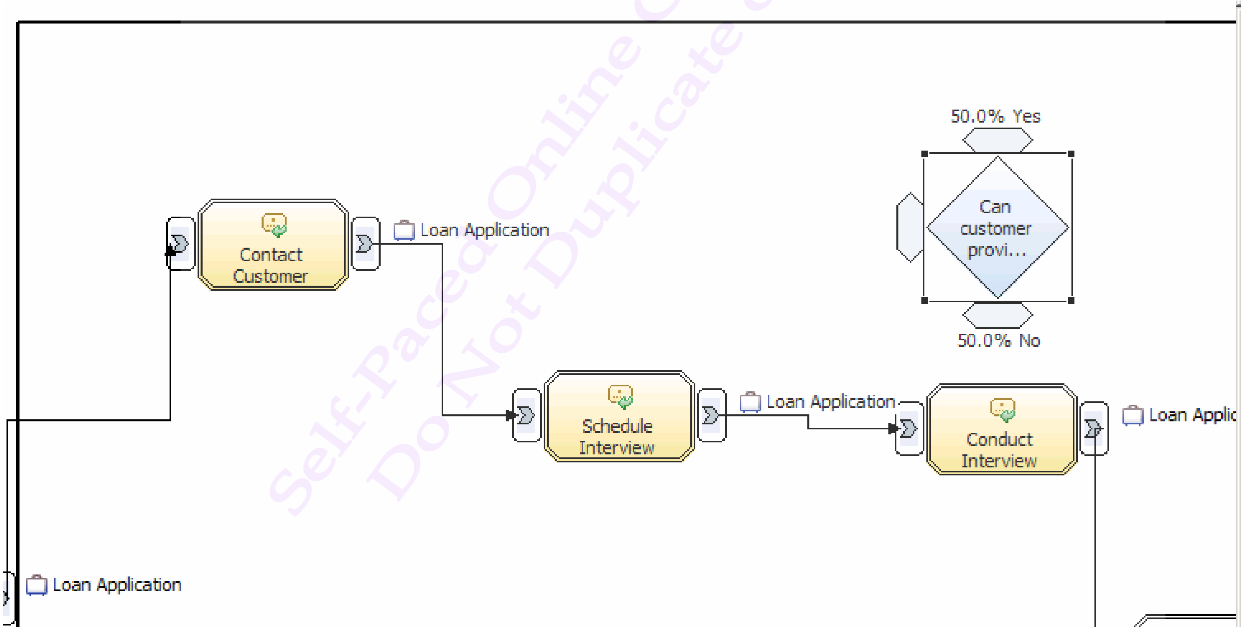
Under **Loan Review Process Catalog**, right-click **Review Loan**, and select **Copy**.

__ 2. Right-click **Loan Review process catalog**, and select **Paste**.

__ 3. Rename **Copy of Review Loan** to **Review Loan To Be**.

__ 4. Open **Review Loan To Be**.

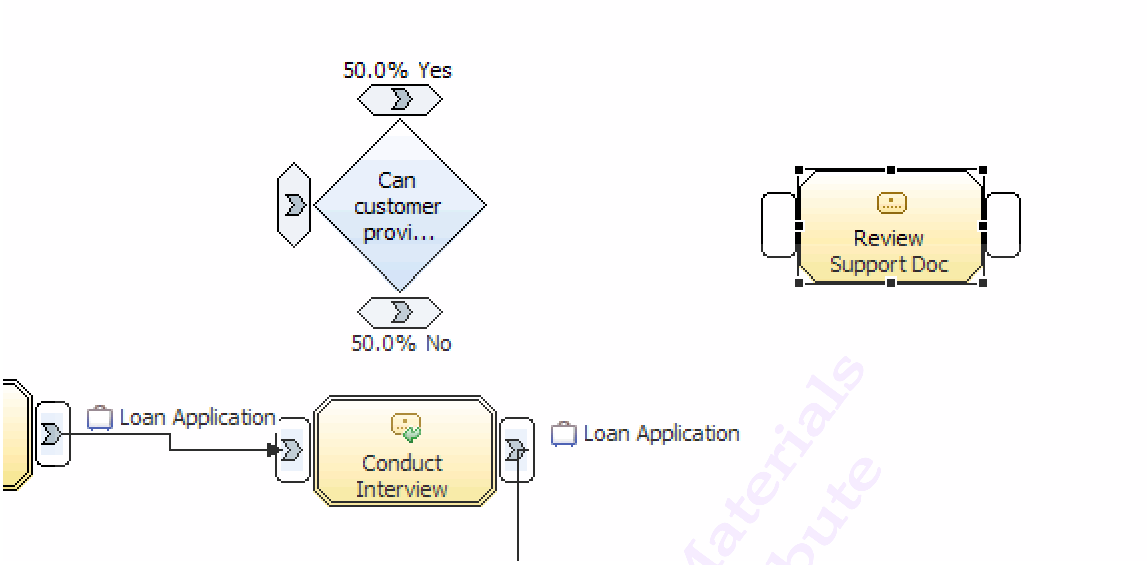
__ 5. Add a new simple decision called `Can customer provide support doc?`



__ 6. In the **Attributes** pane of this new decision, click the **Inputs** tab

__ 7. Add a new input, and associate it with the business item **Loan Application** by clicking the space under **Associate data** and select it under **FMC Project —> Loan Review Data Catalog —> Loan Application** in **Type Selection** window.

__ 8. Add a new local task called `Review Support Doc` next to the decision.



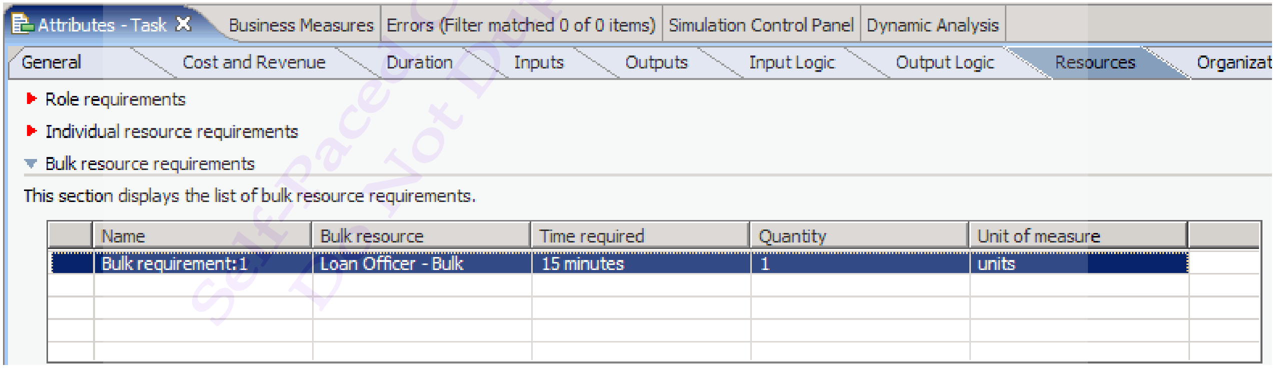
__ 9. In the **Attributes** pane of the **Review Support Doc** task, click the **Inputs** tab, add new input and associate it with the business item **Loan Application**.

__ 10. Click the **Outputs** tab and add two outputs.

__ 11. Click the first **Output** to associate it with the business item **Loan Application**.

__ 12. Do not associate with any business item for **Output:2** as it will connect to the stop node.

__ 13. Click the **Resources** tab, click the **Bulk resource requirements**, and define it as follows:

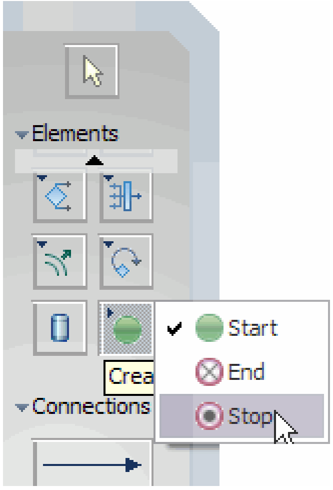


This section displays the list of bulk resource requirements.

Name	Bulk resource	Time required	Quantity	Unit of measure
Bulk requirement:1	Loan Officer - Bulk	15 minutes	1	units

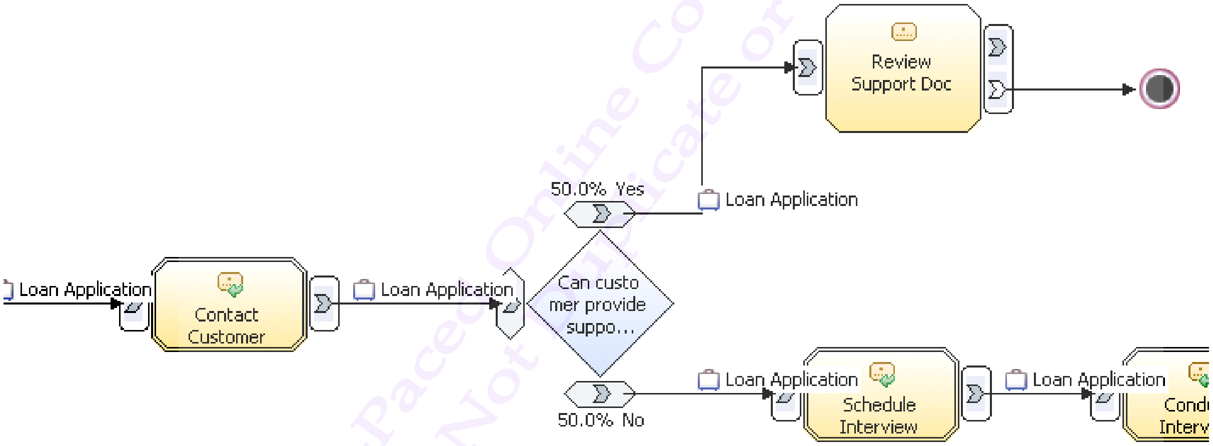
__ 14. Add a **stop node**.

- __ a. On the left side of the process diagram, click the small triangle button next to the green circle under **Elements** in the palette, and select **stop node**.



- __ b. Switch to **Intermediate Mode** if you are not already in it by going to top of the screen and select **Modeling —> Mode —> Intermediate**.

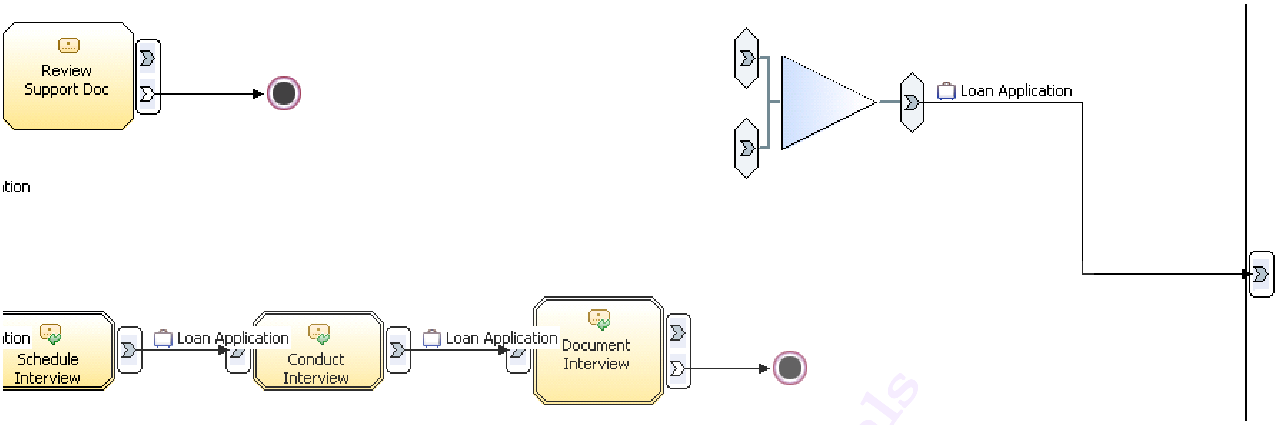
- __ c. Place the **stop node** next to the new task and connect them as follows:



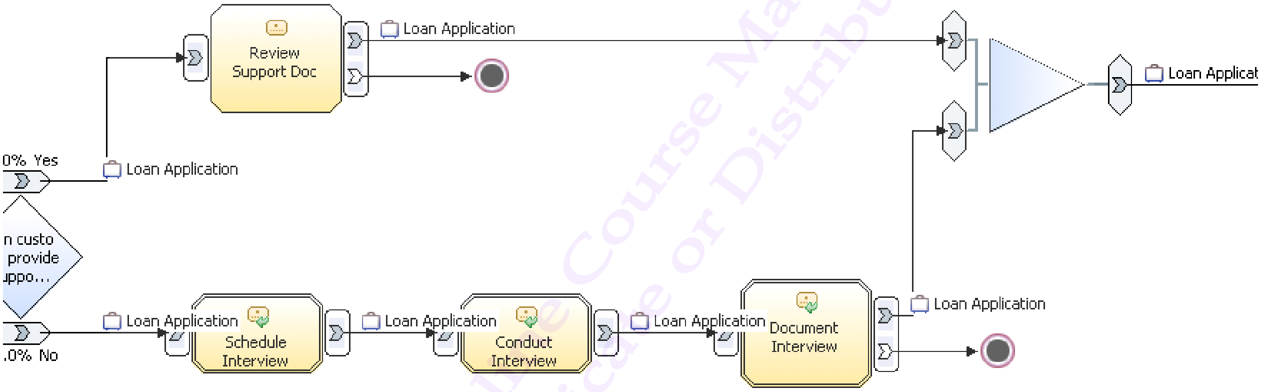
__ 15. Add a **merge** element by selecting it from the **Join** icon drop-down menu on the left.

__ 16. Click the **Outputs** tab of the merge and associate with **Loan Application**.

__ 17. Connect the output as follows:



__ 18. Connect the **merge** as follows:



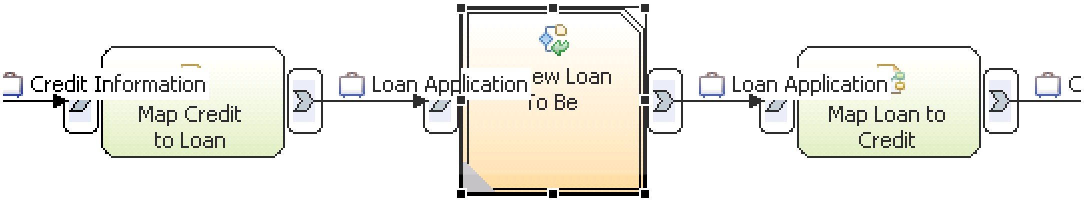
__ 19. Save your work (Ctrl+S).

Now you have completed and saved the changes for the **Review Loan To Be** subprocess. You will now update the **Credit Request Baseline** process with the **Review Loan To Be** subprocess.

__ 20. From the Project Tree, open the **Credit Request Baseline** process.

__ 21. Delete the **Review Loan** subprocess from the diagram.

__ 22. Replace it with **Review Loan To Be** subprocess by dragging it from the Project Tree to the diagram and reconnecting the objects as follows:



__ 23. Save your work (Ctrl+S).

Part 5: Setting up simulation settings for the redesigned model

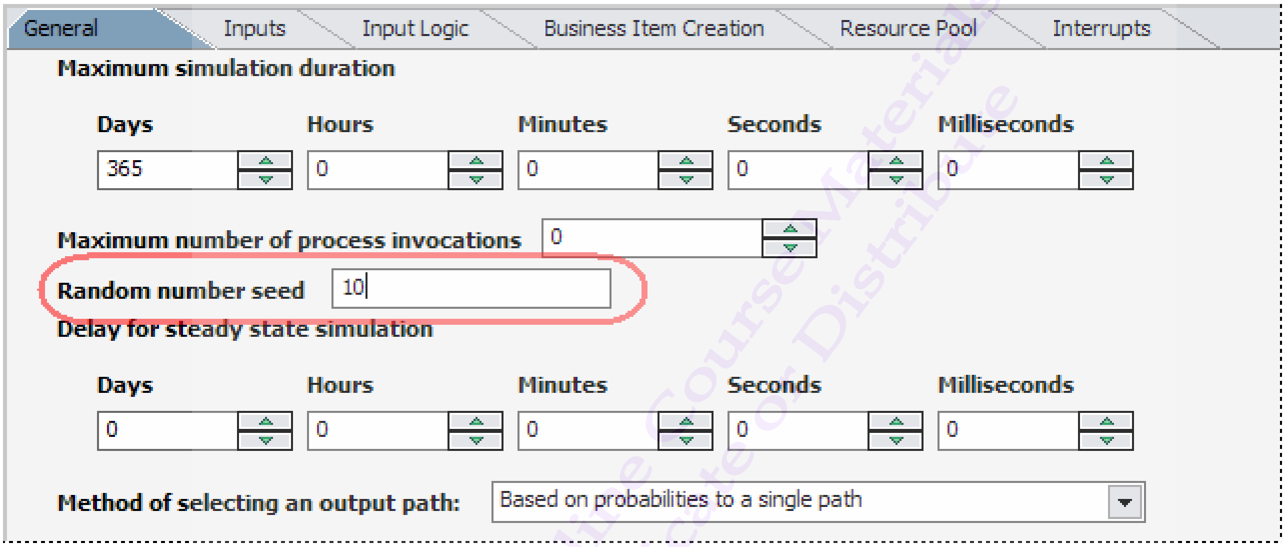
Now that you have made changes to the model, you will run the simulation and generate analysis to determine if the changes have helped to achieve the goal. Before running the simulation, you will first define the settings.

__ 1. From the Project Tree, right-click **Credit Request Baseline** under **FMC Project —> FMC Process Catalog** and select **Simulate**.

The **Credit Request Baseline (Simulate)** diagram opens on the right pane.

__ 2. Click the background of the **Credit Request Baseline (Simulate)** diagram and refer to the **Attributes** pane to view the attributes for the process.

__ 3. In the **General** tab of the **Attributes** pane, set **Random number seed** to `10`.



Maximum simulation duration

Days	Hours	Minutes	Seconds	Milliseconds
365	0	0	0	0

Maximum number of process invocations: 0

Random number seed: 10

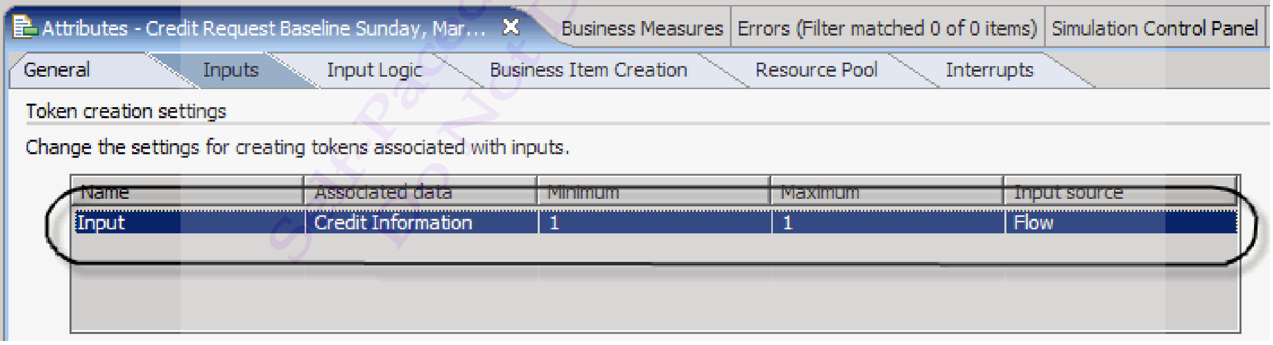
Delay for steady state simulation

Days	Hours	Minutes	Seconds	Milliseconds
0	0	0	0	0

Method of selecting an output path: Based on probabilities to a single path

__ 4. Select the **Inputs** tab.

__ 5. Click the input row under the **Token creation** settings.



Token creation settings

Change the settings for creating tokens associated with inputs.

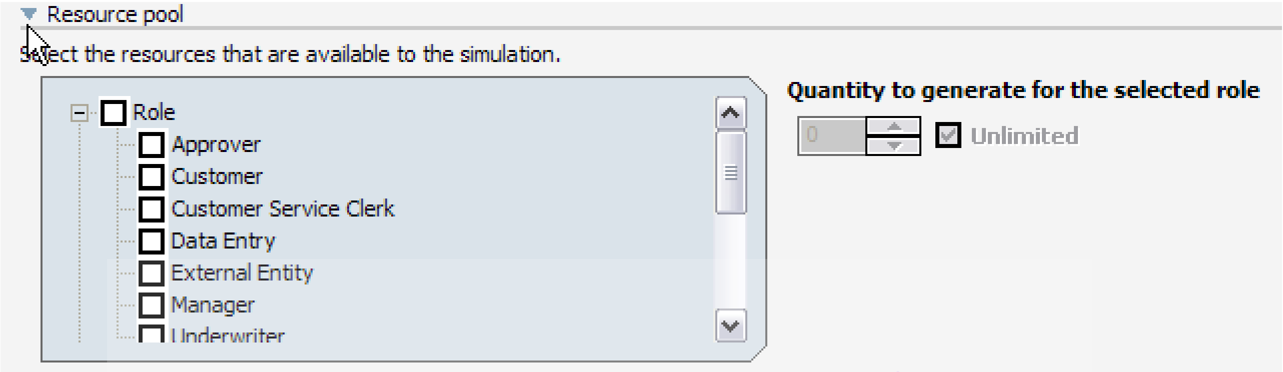
Name	Associated data	Minimum	Maximum	Input source
Input	Credit Information	1	1	Flow

__ 6. Scroll down to change the value for **Total number of tokens** (found below the table) to `10`.

__ 7. Under **Time Trigger**, change the **Start time** to `Monday, January 1, 2007 at 8:00:00 a.m.` on the upcoming Monday by clicking **Edit**.

__ 8. Click the **Resource Pool** tab.

__ 9. Under **Resource pool**, scroll up to **Role** and clear the check box next to **Role**.



Resource pool

Select the resources that are available to the simulation.

- ☐ Role
  - ☐ Approver
  - ☐ Customer
  - ☐ Customer Service Clerk
  - ☐ Data Entry
  - ☐ External Entity
  - ☐ Manager
  - ☐ Underwriter

Quantity to generate for the selected role

0 ☑ Unlimited

__ 10. To define task durations inside the subprocess **Review Loan To Be**, right-click the diagram and select **Expand All**.

__ 11. Change the times of the tasks inside the subprocess as follows:

Review Loan To Be:

Contact Customer: `15 minutes`

Review Support Doc: `15 minutes`

Schedule Interview: `15 minutes`

Conduct Interview: `1 hour`

Document Interview: `1 hour`

__ 12. Save your work (Ctrl+S).

Part 6: Running simulation and generating analysis for the redesigned model

__ 1. Click the **Control Panel** tab to display the **Simulation Control Panel** pane.

__ 2. Click **Run** from the **Simulation Control Panel**.

It will take a few seconds for the simulation to be completed.

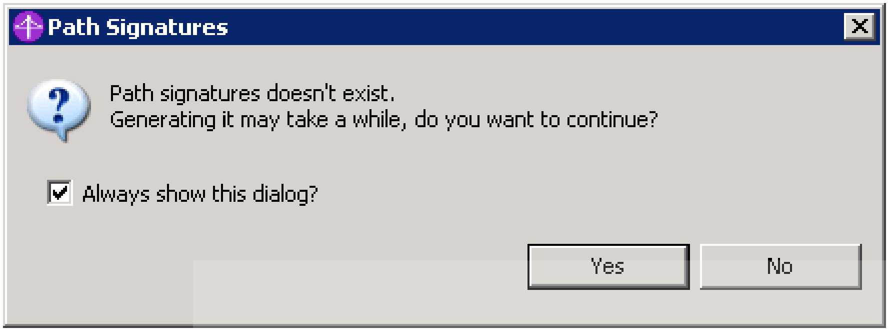
__ 3. Once the simulation is completed, you will see the simulation results and generate the dynamic analysis. From the Project Tree, right-click the simulation result that was just created, and select **Rename**. Enter `Redesign Results` as the new name.

__ 4. Right-click the **Redesign Results**, and select **Dynamic Analysis —> Process Cases Analysis —> Process Duration**.

__ 5. Click **OK** to continue.

__ 6. Select **All process instances** and click **Finish**.

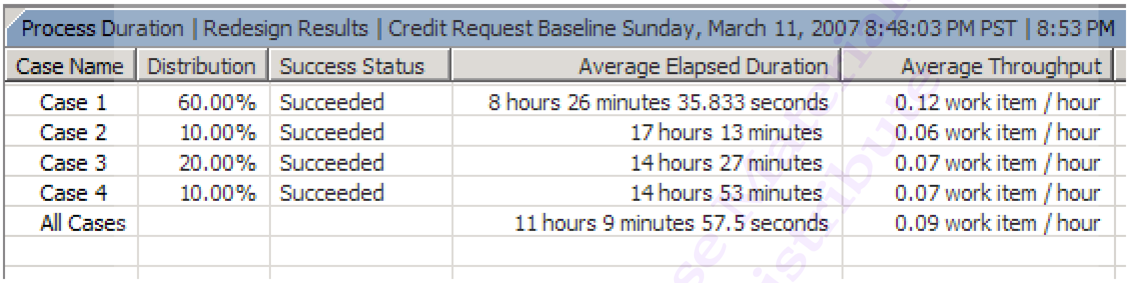
___ 7. Click **Yes** if the **Path Signatures** dialog box appears.



Path signatures doesn't exist.
Generating it may take a while, do you want to continue?

☑ Always show this dialog?

The **Process Duration** analysis view appears:



Process Duration | Redesign Results | Credit Request Baseline Sunday, March 11, 2007 8:48:03 PM PST | 8:53 PM

Case Name	Distribution	Success Status	Average Elapsed Duration	Average Throughput
Case 1	60.00%	Succeeded	8 hours 26 minutes 35.833 seconds	0.12 work item / hour
Case 2	10.00%	Succeeded	17 hours 13 minutes	0.06 work item / hour
Case 3	20.00%	Succeeded	14 hours 27 minutes	0.07 work item / hour
Case 4	10.00%	Succeeded	14 hours 53 minutes	0.07 work item / hour
All Cases			11 hours 9 minutes 57.5 seconds	0.09 work item / hour

___ 8. Based on the dynamic analysis that you have just completed:

The average total process duration is ______________.

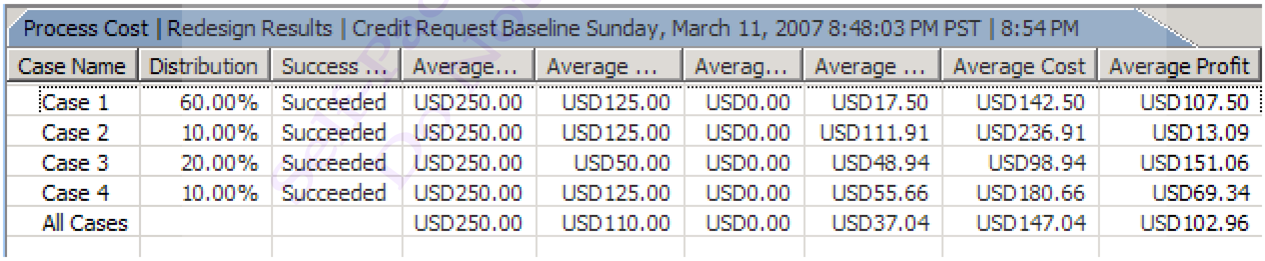
___ 9. Right-click the **Dynamic Analysis** tab and select **Close**.

___ 10. Right-click the **Redesign Results**, and select **Dynamic Analysis —> Process Cases Analysis —> Process Cost**.

___ 11. Select **All Process Instances**.

___ 12. Click **Finish**.

The **Process Cost** analysis view appears:



Process Cost | Redesign Results | Credit Request Baseline Sunday, March 11, 2007 8:48:03 PM PST | 8:54 PM

Case Name	Distribution	Success ...	Average...	Average ...	Averag...	Average ...	Average Cost	Average Profit
Case 1	60.00%	Succeeded	USD250.00	USD125.00	USD0.00	USD17.50	USD142.50	USD107.50
Case 2	10.00%	Succeeded	USD250.00	USD125.00	USD0.00	USD111.91	USD236.91	USD13.09
Case 3	20.00%	Succeeded	USD250.00	USD50.00	USD0.00	USD48.94	USD98.94	USD151.06
Case 4	10.00%	Succeeded	USD250.00	USD125.00	USD0.00	USD55.66	USD180.66	USD69.34
All Cases			USD250.00	USD110.00	USD0.00	USD37.04	USD147.04	USD102.96

___ 13. Based on the dynamic analysis that you have just completed:

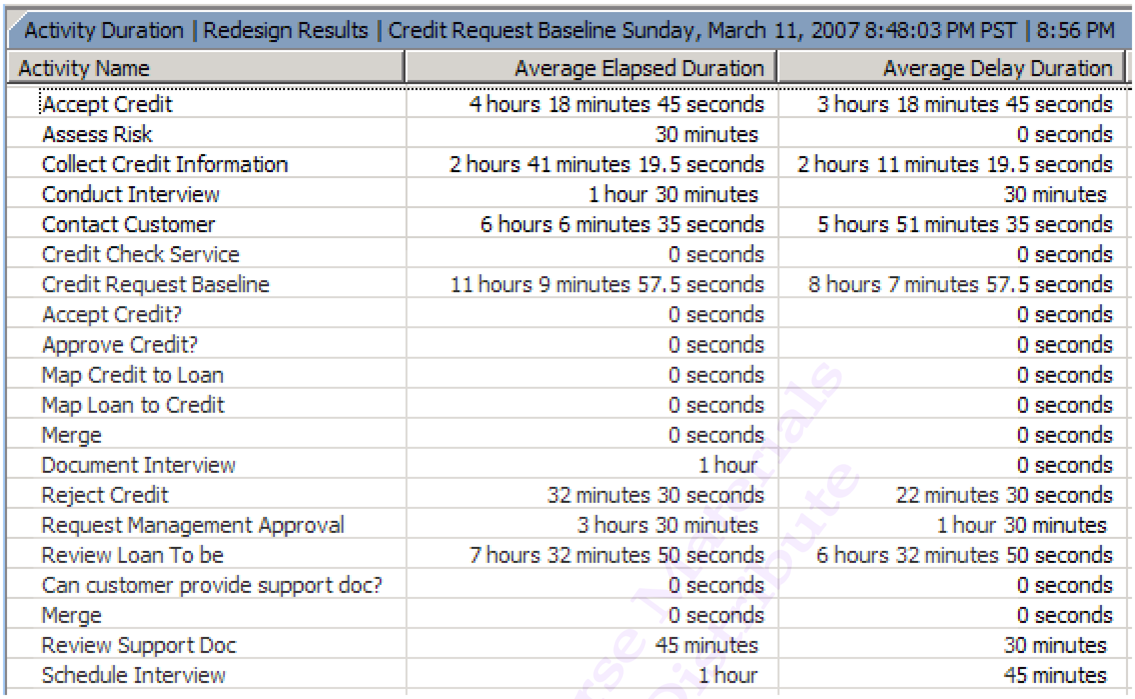
The weighted average total process cost is $______________.

___ 14. Right-click the **Dynamic Analysis** tab and select **Close**.

Now, you will focus on the activity duration and cost to find out which task takes the longest time and costs the most by generating the Activity analysis.

___ 15. Right-click the **Redesign Results**, and select **Dynamic Analysis —> Aggregated Analysis —> Activity Duration**.

The **Activity Duration** analysis view appears:



Activity Duration | Redesign Results | Credit Request Baseline Sunday, March 11, 2007 8:48:03 PM PST | 8:56 PM

Activity Name	Average Elapsed Duration	Average Delay Duration
Accept Credit	4 hours 18 minutes 45 seconds	3 hours 18 minutes 45 seconds
Assess Risk	30 minutes	0 seconds
Collect Credit Information	2 hours 41 minutes 19.5 seconds	2 hours 11 minutes 19.5 seconds
Conduct Interview	1 hour 30 minutes	30 minutes
Contact Customer	6 hours 6 minutes 35 seconds	5 hours 51 minutes 35 seconds
Credit Check Service	0 seconds	0 seconds
Credit Request Baseline	11 hours 9 minutes 57.5 seconds	8 hours 7 minutes 57.5 seconds
Accept Credit?	0 seconds	0 seconds
Approve Credit?	0 seconds	0 seconds
Map Credit to Loan	0 seconds	0 seconds
Map Loan to Credit	0 seconds	0 seconds
Merge	0 seconds	0 seconds
Document Interview	1 hour	0 seconds
Reject Credit	32 minutes 30 seconds	22 minutes 30 seconds
Request Management Approval	3 hours 30 minutes	1 hour 30 minutes
Review Loan To be	7 hours 32 minutes 50 seconds	6 hours 32 minutes 50 seconds
Can customer provide support doc?	0 seconds	0 seconds
Merge	0 seconds	0 seconds
Review Support Doc	45 minutes	30 minutes
Schedule Interview	1 hour	45 minutes

__ 16. Based on the dynamic analysis that you have just completed:

List the top three (3) activities (tasks or processes) which have longest average elapsed duration as follows:

a.) Activity ______________________________ Duration __________________

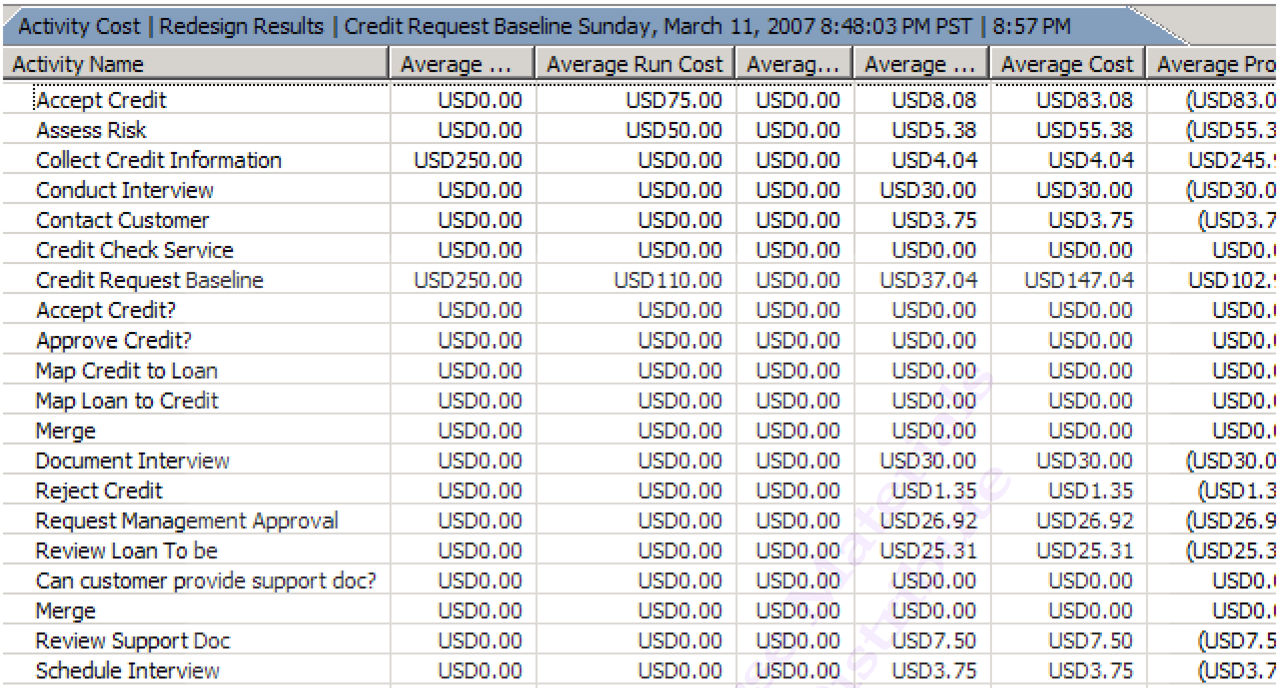
b.) Activity ______________________________ Duration __________________

c.) Activity ______________________________ Duration __________________

__ 17. Right-click the **Dynamic Analysis** tab and select **Close**.

__ 18. Right-click the **Redesign Results**, and select **Dynamic Analysis —> Aggregated Analysis —> Activity Cost**.

The **Activity Cost** analysis view appears:



Activity Cost | Redesign Results | Credit Request Baseline Sunday, March 11, 2007 8:48:03 PM PST | 8:57 PM

Activity Name	Average ...	Average Run Cost	Averag...	Average ...	Average Cost	Average Pro
Accept Credit	USD0.00	USD75.00	USD0.00	USD8.08	USD83.08	(USD83.0
Assess Risk	USD0.00	USD50.00	USD0.00	USD5.38	USD55.38	(USD55.3
Collect Credit Information	USD250.00	USD0.00	USD0.00	USD4.04	USD4.04	USD245.
Conduct Interview	USD0.00	USD0.00	USD0.00	USD30.00	USD30.00	(USD30.0
Contact Customer	USD0.00	USD0.00	USD0.00	USD3.75	USD3.75	(USD3.7
Credit Check Service	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.
Credit Request Baseline	USD250.00	USD110.00	USD0.00	USD37.04	USD147.04	USD102.
Accept Credit?	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.
Approve Credit?	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.
Map Credit to Loan	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.
Map Loan to Credit	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.
Merge	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.
Document Interview	USD0.00	USD0.00	USD0.00	USD30.00	USD30.00	(USD30.0
Reject Credit	USD0.00	USD0.00	USD0.00	USD1.35	USD1.35	(USD1.3
Request Management Approval	USD0.00	USD0.00	USD0.00	USD26.92	USD26.92	(USD26.9
Review Loan To be	USD0.00	USD0.00	USD0.00	USD25.31	USD25.31	(USD25.3
Can customer provide support doc?	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.
Merge	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.
Review Support Doc	USD0.00	USD0.00	USD0.00	USD7.50	USD7.50	(USD7.5
Schedule Interview	USD0.00	USD0.00	USD0.00	USD3.75	USD3.75	(USD3.7

__ 19. Based on the dynamic analysis that you have just completed:

a.) Activity ______________________________ Cost $_________________

b.) Activity ______________________________ Cost $_________________

c.) Activity ______________________________ Cost $_________________

__ 20. Right-click the **Dynamic Analysis** tab and select **Close**.

Part 7: Comparing simulation results

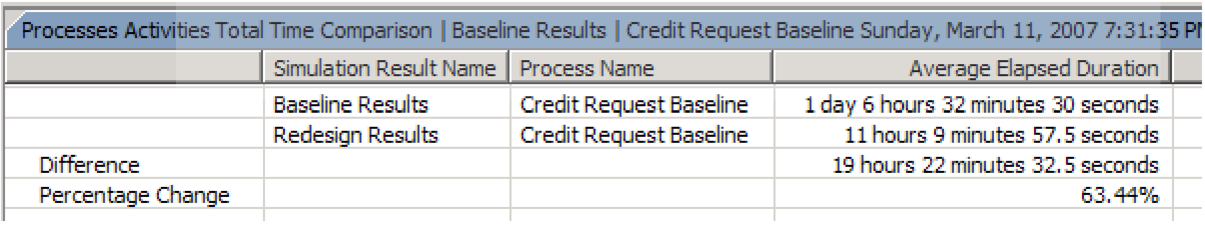
Now you have generated the simulation results of both models. You can compare the redesign results with the Baseline results.

__ 1. Right-click the **Baseline Results**, and select **Dynamic Analysis —> Processes Comparison Analysis —> Processes Activities Total Time Comparison**.

__ 2. Select **Redesign Results** and click **OK**.

__ 3. Select **All process instances** and click **Finish**.

The **Processes Activities Total Time Comparison Analysis** results display:



Processes Activities Total Time Comparison | Baseline Results | Credit Request Baseline Sunday, March 11, 2007 7:31:35 PI

	Simulation Result Name	Process Name	Average Elapsed Duration
	Baseline Results	Credit Request Baseline	1 day 6 hours 32 minutes 30 seconds
	Redesign Results	Credit Request Baseline	11 hours 9 minutes 57.5 seconds
Difference			19 hours 22 minutes 32.5 seconds
Percentage Change			63.44%

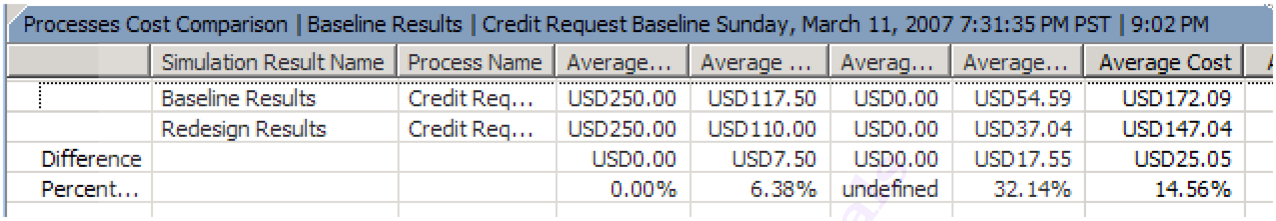
The redesign model has reduced the average elapsed duration by ________%.

__ 1. Right-click the **Baseline Results**, and select **Dynamic Analysis —> Processes Comparison Analysis —> Processes Cost Comparison**.

__ 2. Select **Redesign Results** and click **OK**.

__ 3. Select **All process instances** and click **Finish**.

The **Processes Cost Comparison Analysis** results display:



Processes Cost Comparison | Baseline Results | Credit Request Baseline Sunday, March 11, 2007 7:31:35 PM PST | 9:02 PM

	Simulation Result Name	Process Name	Average...	Average ...	Averag...	Average...	Average Cost
	Baseline Results	Credit Req...	USD250.00	USD117.50	USD0.00	USD54.59	USD172.09
	Redesign Results	Credit Req...	USD250.00	USD110.00	USD0.00	USD37.04	USD147.04
Difference			USD0.00	USD7.50	USD0.00	USD17.55	USD25.05
Percent...			0.00%	6.38%	undefined	32.14%	14.56%

The redesign model has reduced the average cost by ____%.

The redesign model has increased the average profit by ____%.

__ 4. Right-click the **Dynamic Analysis** tab and select **Close**.

__ 5. Exit Modeler.

Part 8: Review questions

Your instructor will review the following questions with you.

__ 1. What types of analysis are required for process re-engineering?

____

__ 2. What is process goal analysis?

____

__ 3. When do you need to conduct redesign analysis?

____

__ 4. What are the four business analysis components?

____

END OF EXERCISE

Exercise 8. Create a custom report

What this exercise is about

This lab will provide hands-on experience in the query and advanced reporting functions in WebSphere Business Modeler.

What you should be able to do

At the end of the lab, you should be able to:

- Create a custom report
- Create a report style master
- Create a report template
- Add report details
- Add a report chart
- Add a header and footer to the report

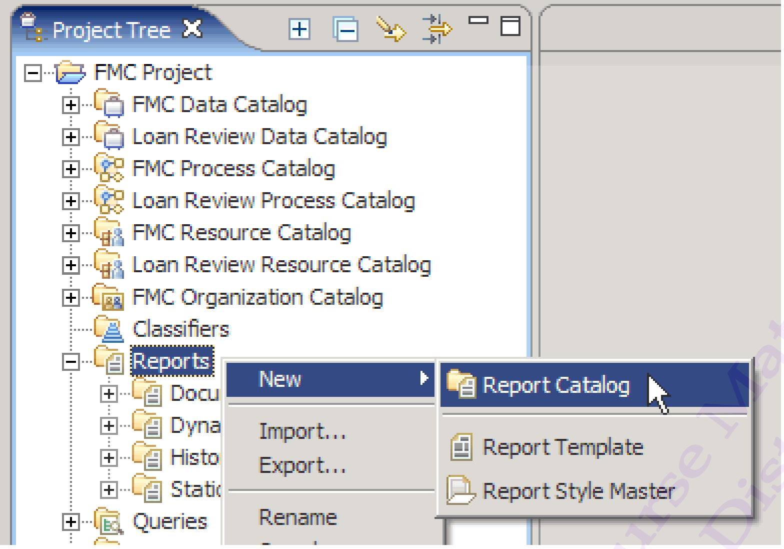
Requirements

Previous labs should be completed successfully.

Exercise instructions

Part 1: Creating a report style master

__ 1. From the Project Tree, select **FMC Project —> Reports**, right-click, and select **New —> Report Catalog**.

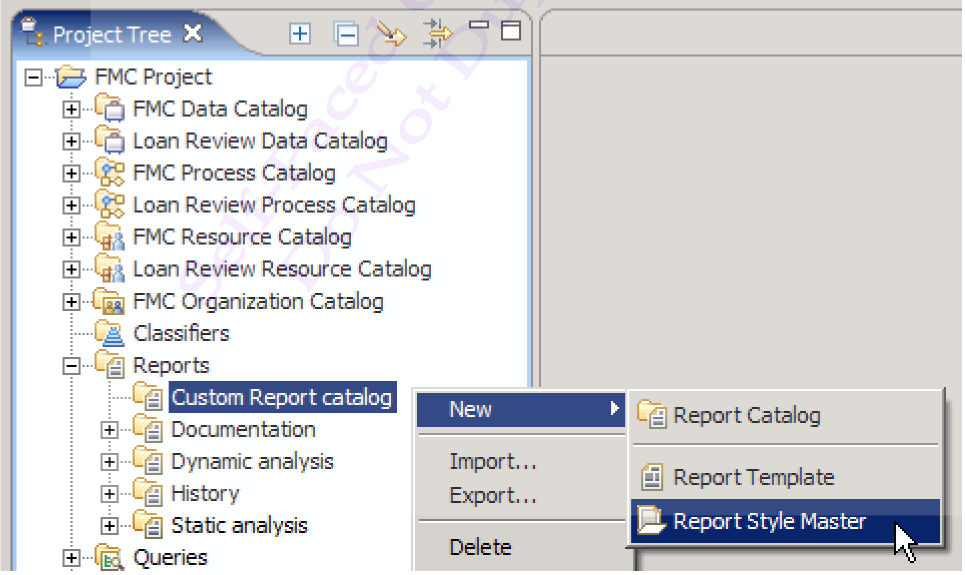


__ 2. Enter `Custom Report Catalog` as the **Name of new report catalog**.

__ 3. Click **Finish**.

The Custom Report Catalog is created.

__ 4. Go to **FMC Project —> Reports —> Custom Report Catalog**, right-click, and select **New —> Report Style Master**.

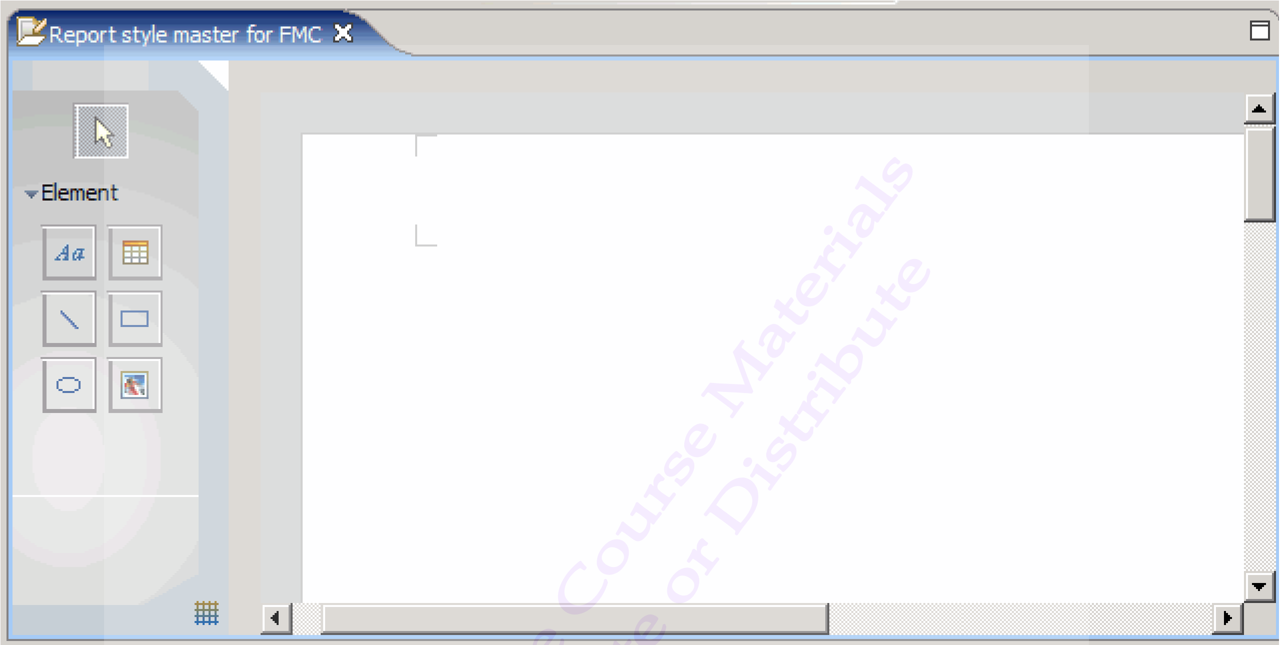


A report style master enables you to reuse header and footer information for multiple report templates. Rather than adding header and footer information to every report template that you create, you can add your required fields just once to a single report style master. You can then apply that report style master to as many report templates as you want. For every report template, the same set of header and footer information will appear.

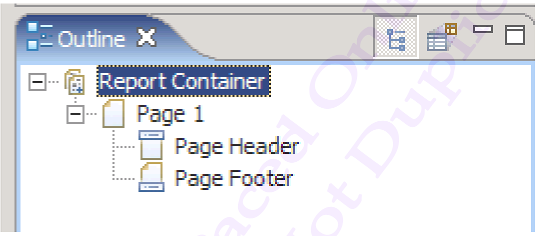
__ 5. Enter `Report style master for FMC` as the **Name of new report style master**.

__ 6. Click **Finish**.

A new report style master is created.



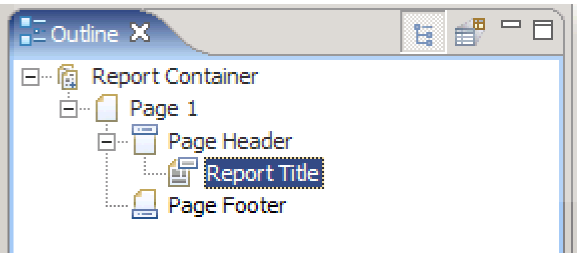
__ 7. From the Outline, expand the **Report Container.**



__ 8. To define the page header, select **Page Header**.

__ 9. Right-click to select **New —> Report Title**.

A report title has been added to the header of the style master.

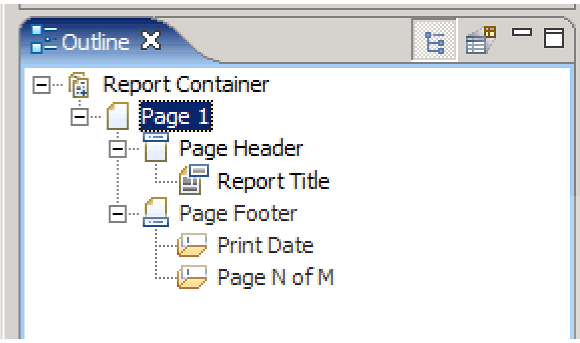


__ 10. To define the page footer, select **Page Footer**.

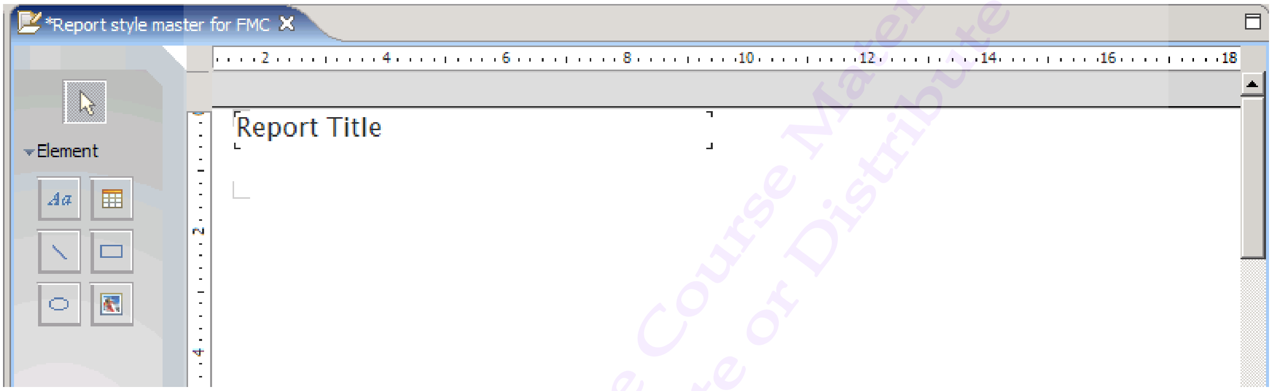
__ 11. Right-click to select **New —> Print Date**.

__ 12. Right-click to select **New —> Page N of M**.

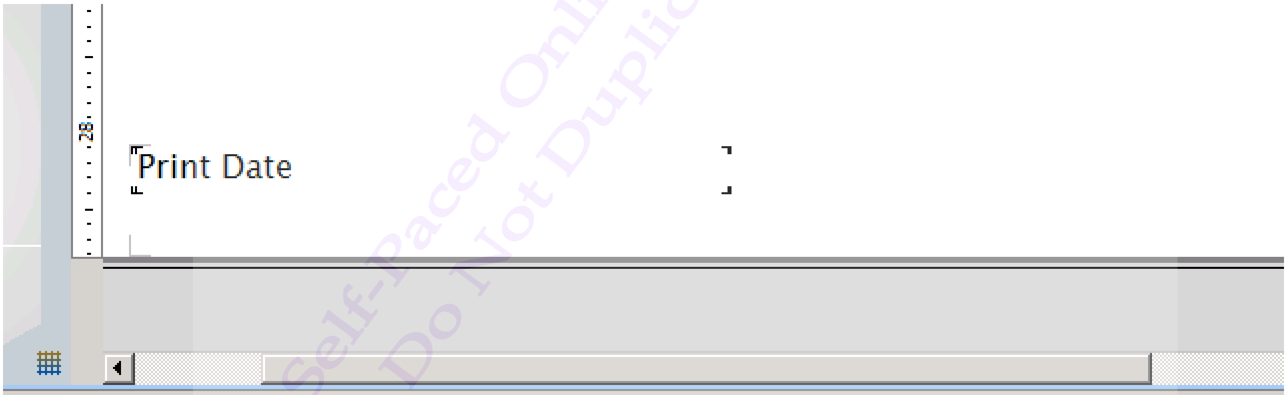
A print date and page number have been added to the header of the style master.



You can see the new objects being added to the header of style master on the editor.

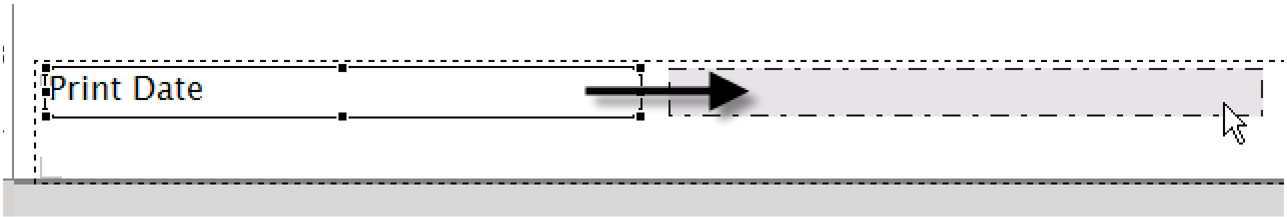


You can also see the new objects being added to footer of the style master on the editor.

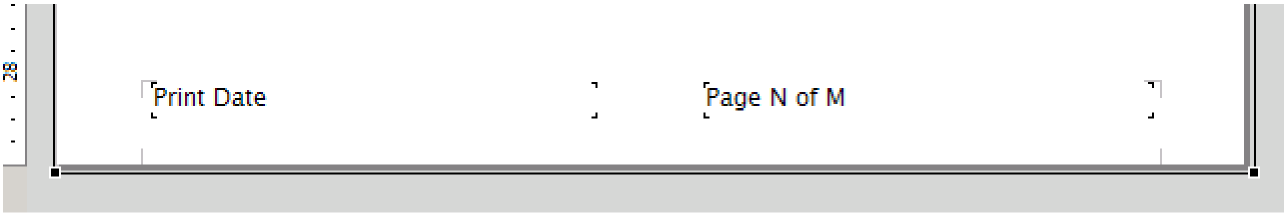


As you added the print date and page number to the report container, both of them are stacking on each other.

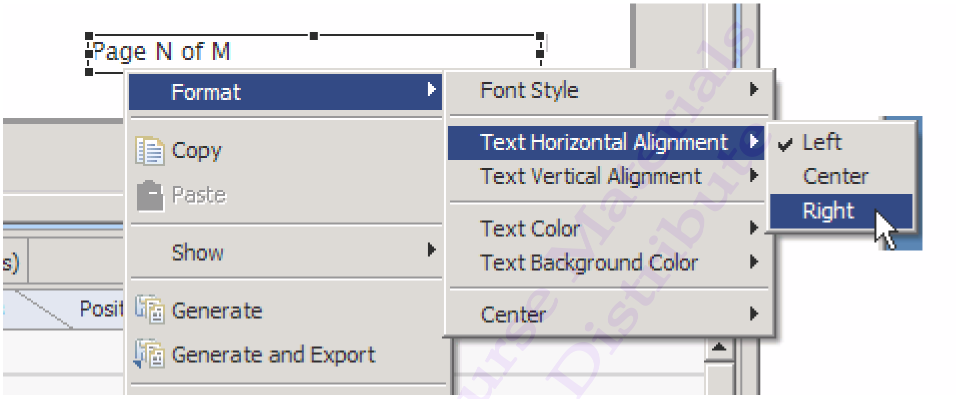
__ 13. Use the mouse to drag the **Print Date** on the editor. You can also see the new objects being added to the style master on the editor.



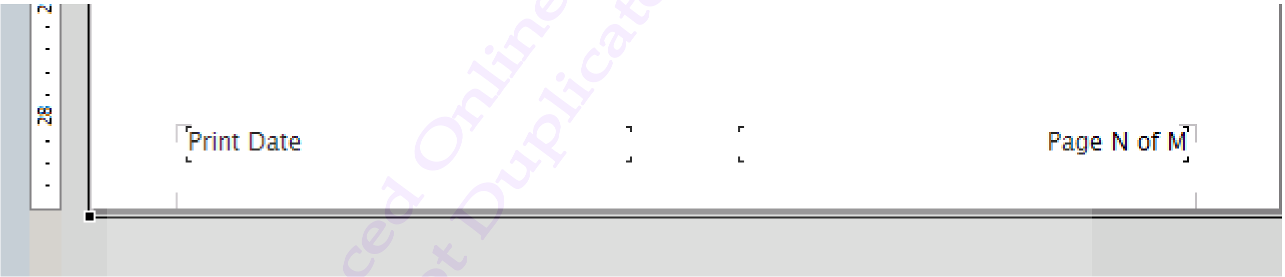
__ 14. Now you can put the **Print Date** on the far left of the page footer, and the **Page number** on the right.



__ 15. Select the **Page N of M** from the editor, and right-click to select **Format —> Text Horizontal Alignment —> Right**.



The alignment is completed.



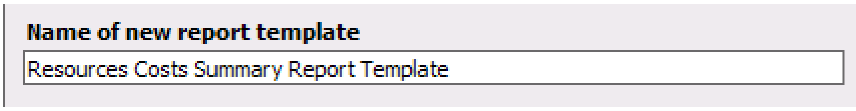
__ 16. Press Ctrl+S to save.

__ 17. Close the style master editor.

Part 2: Creating a report template

__ 1. From the **FMC Project —> Reports —> Custom Report Catalog**, right-click and select **New —> Report Template**.

__ 2. Enter `Resources Costs Summary Report Template` as the **Name of new report template**.



Name of new report template

Resources Costs Summary Report Template

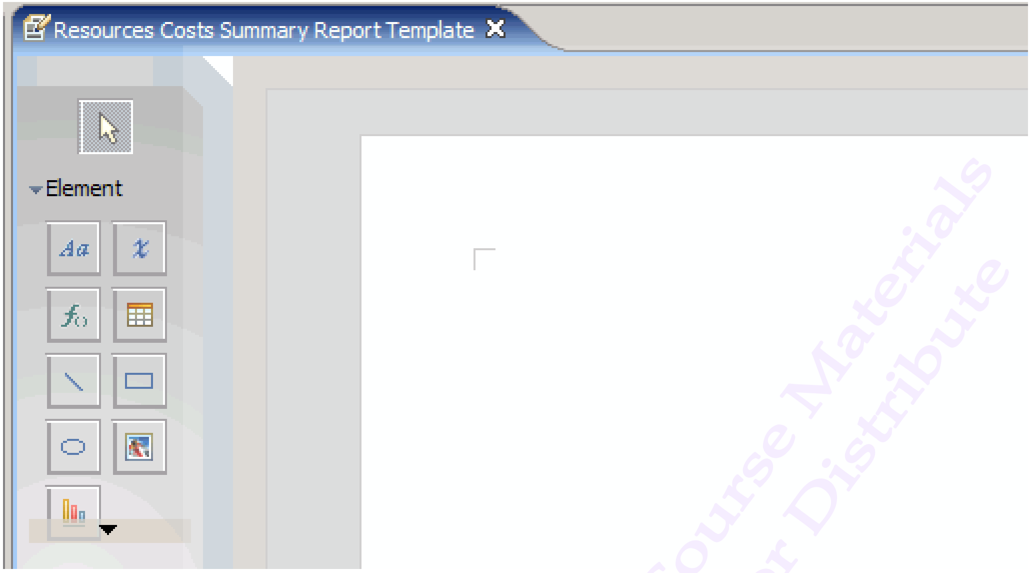
__ 3. Click **Next**.

__ 4. From the data source, expand **Static Analysis** and select **Resources Costs Summary Analysis**.

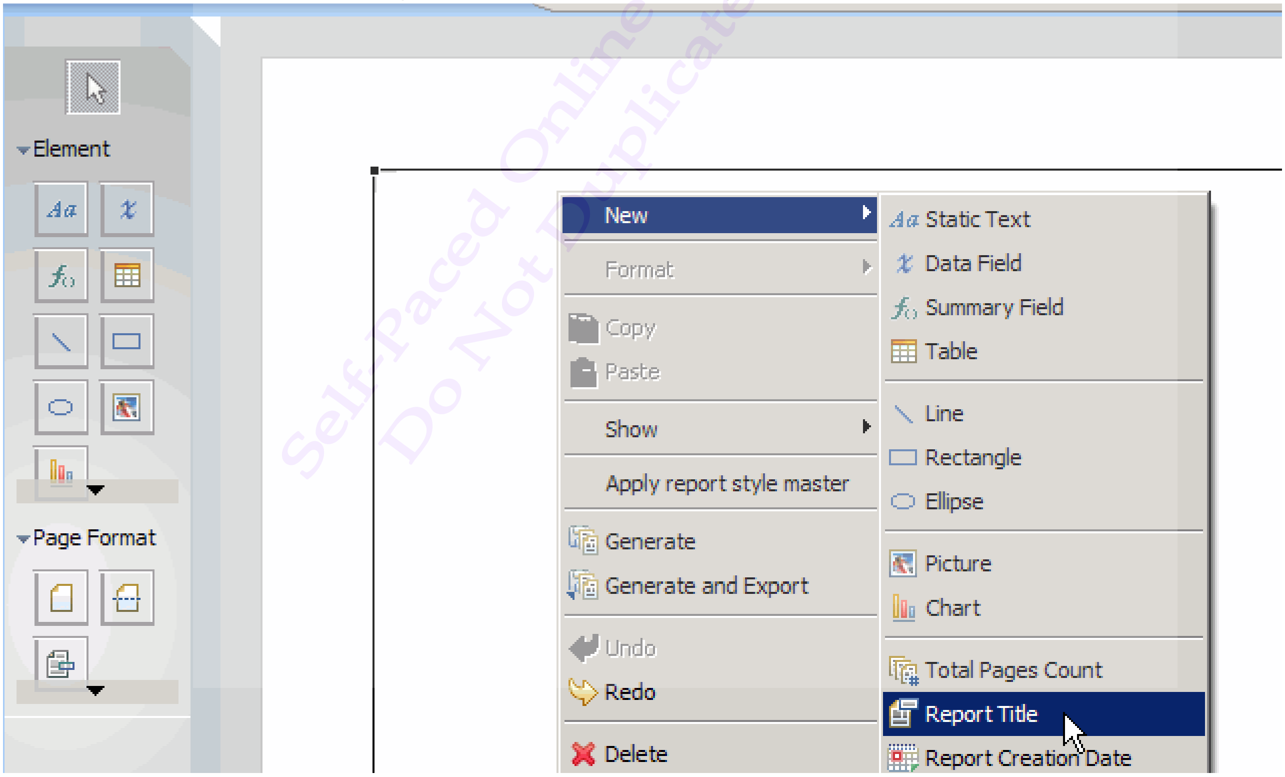
__ 5. Select **WebSphere Modeler** for report designer.

__ 6. Click **Finish**.

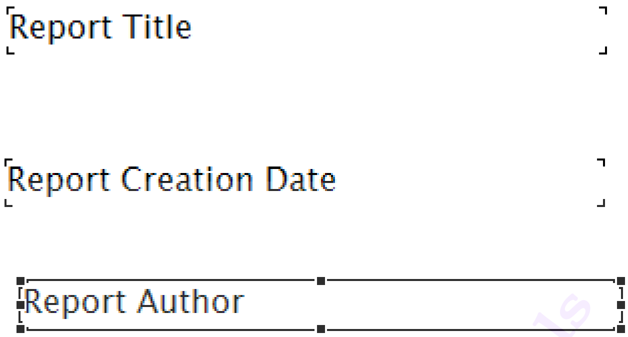
A blank template is created.



__ 7. In the report editor, right-click within the margins and select **New —> Report Title**.



__ 8. Repeat the previous step to add **Report Creation Date** and **Report Author** to the report.

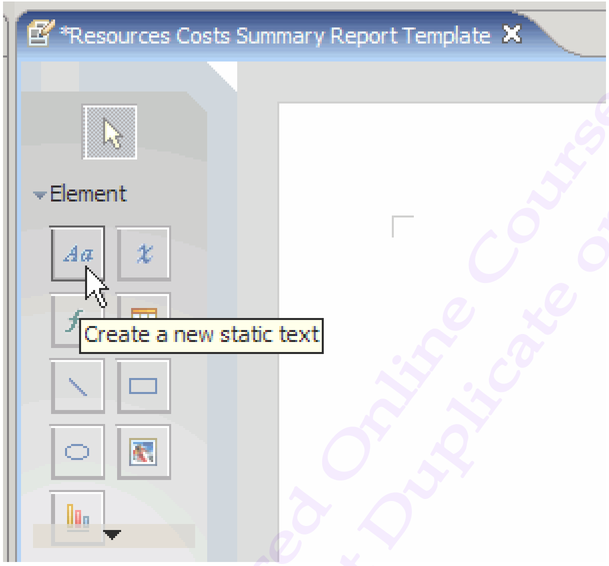


Report Title

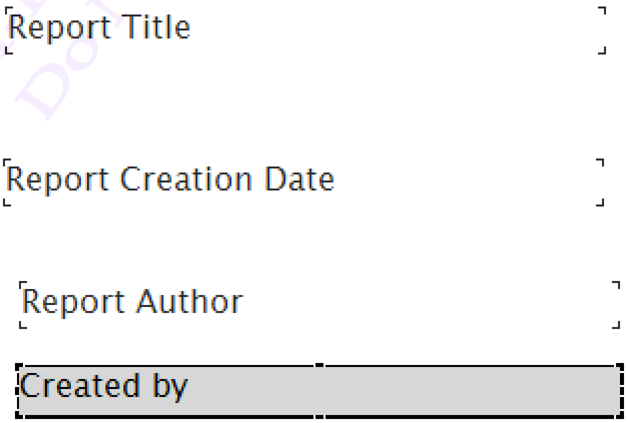
Report Creation Date

Report Author

__ 9. From the palette, click the **Create a new static text** button and drop onto the report page.



__ 10. Double-click the new text field and type `Created by`.



Report Title

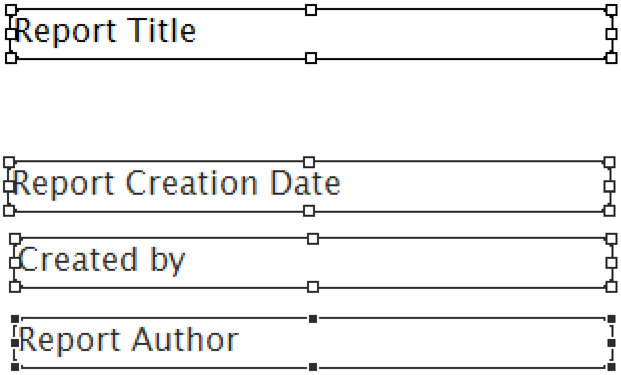
Report Creation Date

Report Author

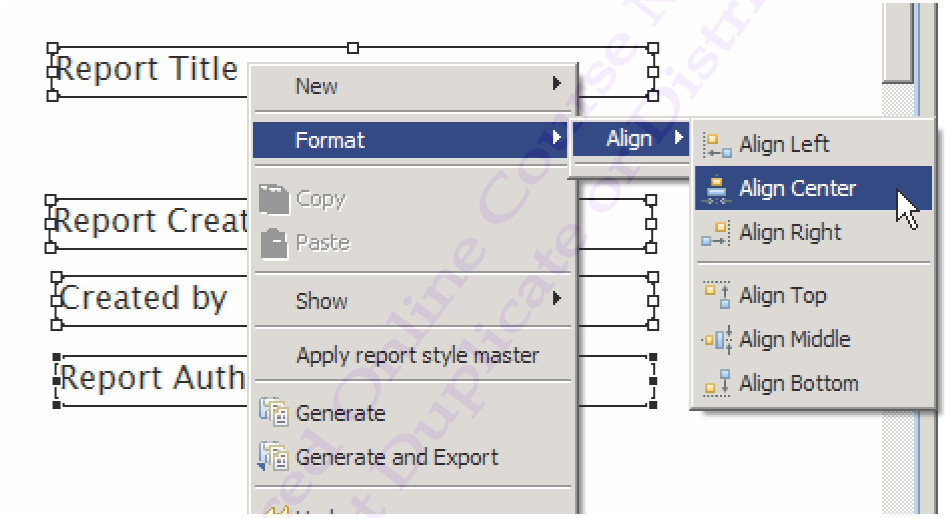
Created by

__ 11. Move the **Created by** text field above the **Report Author** text field.

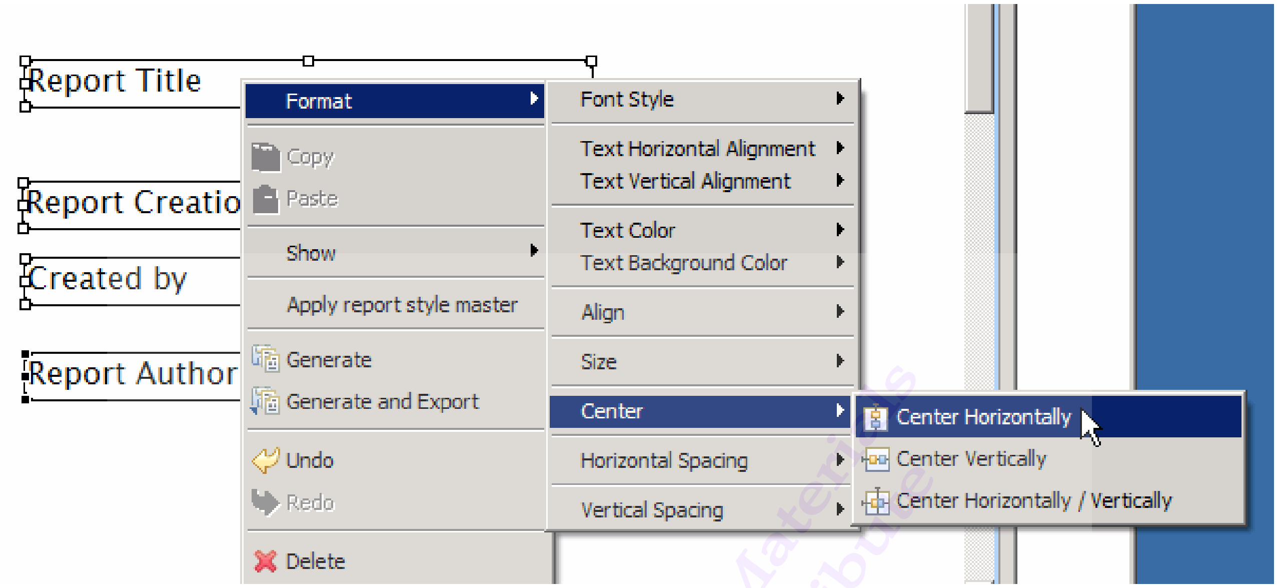
__ 12. To format alignment, while holding Shift key, select every field until all of the fields are highlighted.



__ 13. Right-click and select **Format —> Align —> Align Center**.

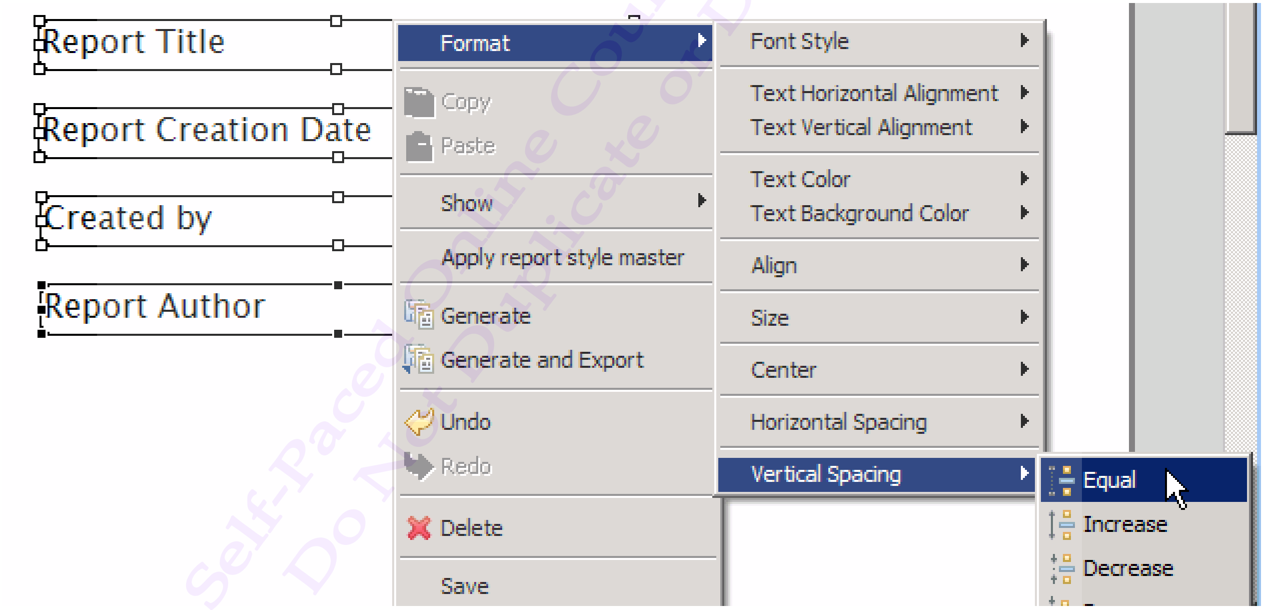


__ 14. Right-click again and select **Format —> Center —> Center Horizontally**.



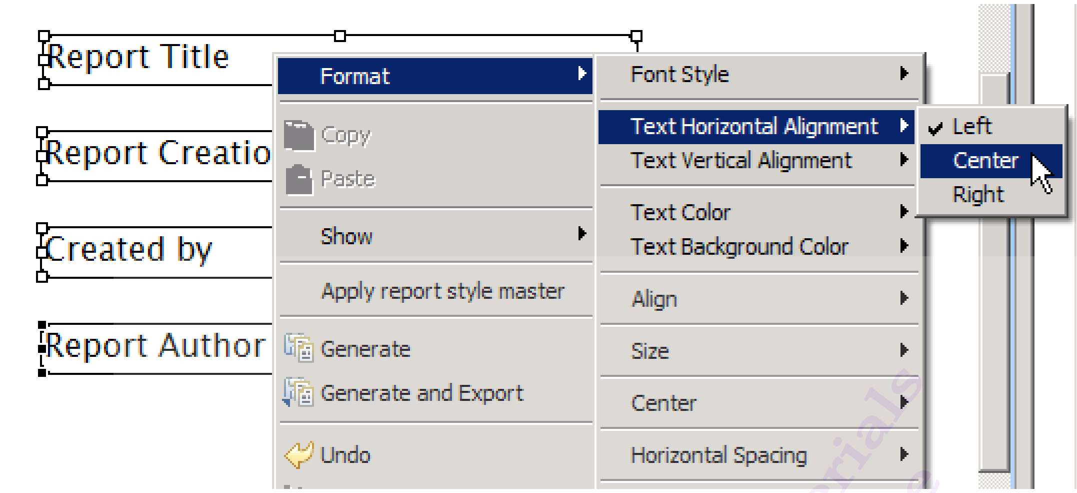
The fields are now centered horizontally on the page.

__ 15. Right-click again and select **Format —> Vertical Spacing —> Equal**.

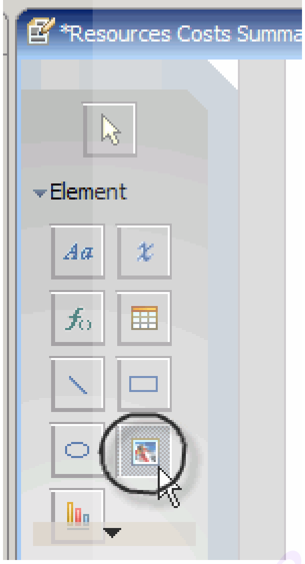


The fields are now spaced equally.

__ 16. Right-click again and select **Format —> Text Horizontal Alignment —> Center**.



__ 17. Insert an image by clicking the **Insert a new picture** button from the palette and place between the **Report Creation Date** and **Created by** text boxes.



An **Open** window is displayed.

__ 18. Navigate to the **My Documents —> My Pictures** directory.

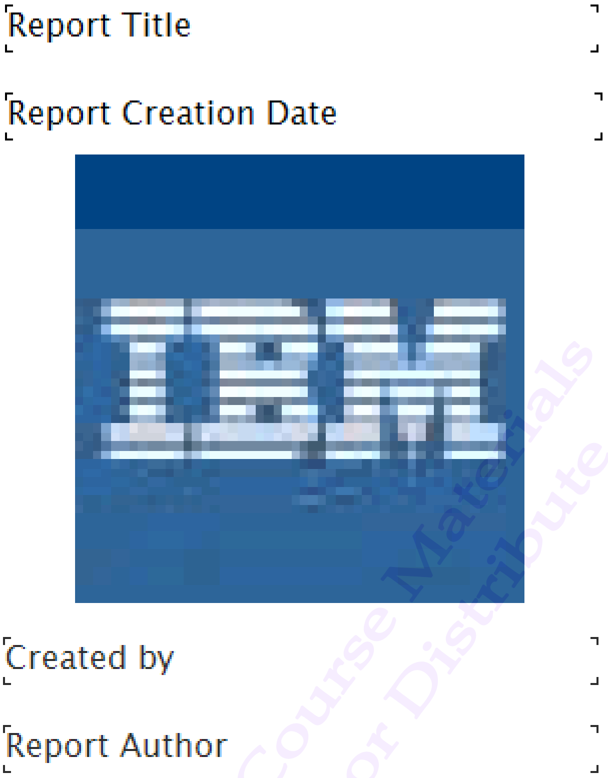
If you are using Windows 2000, select **sample.jpg**.

If you are using Windows XP, select any image file.

If no .jpg files are present, use any image available.

__ 19. Click **Open**.

___ 20. Rearrange the objects as follows:



Report Title

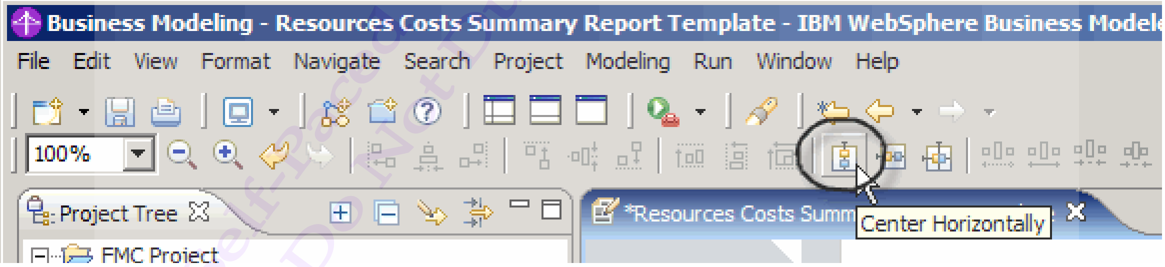
Report Creation Date

Created by

Report Author

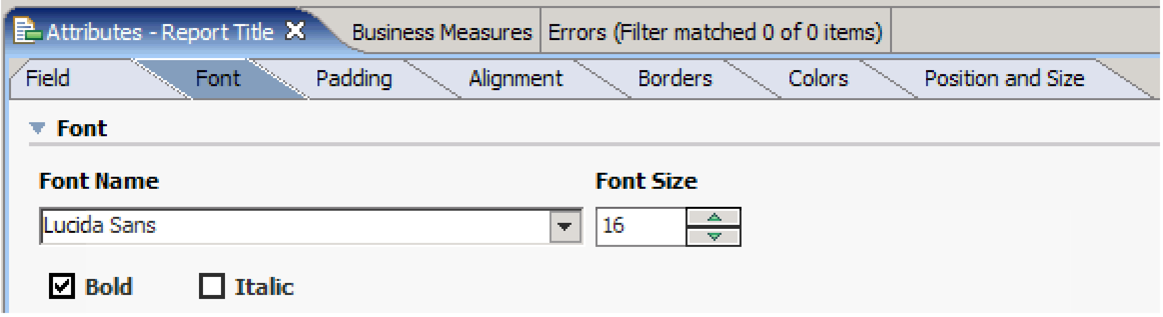
Tip: To maintain the original alignment of elements being moved, hold Shift while dragging the elements.

___ 21. Select the image and click the **Center Horizontally** button from the toolbar.



___ 22. Select the **Report Title** field.

__ 23. In the **Attributes** pane, scroll to the **Font** section, increase the **Font Size** to `16`, and click the check box next to **Bold**.



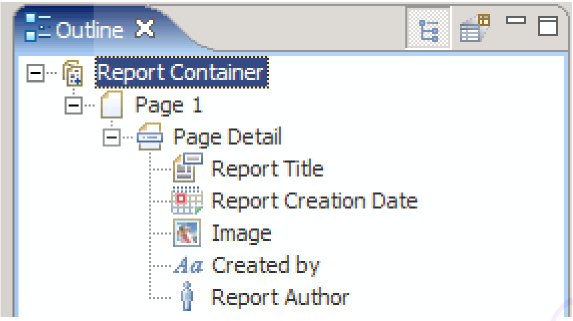
Font

Font Name: Lucida Sans

Font Size: 16

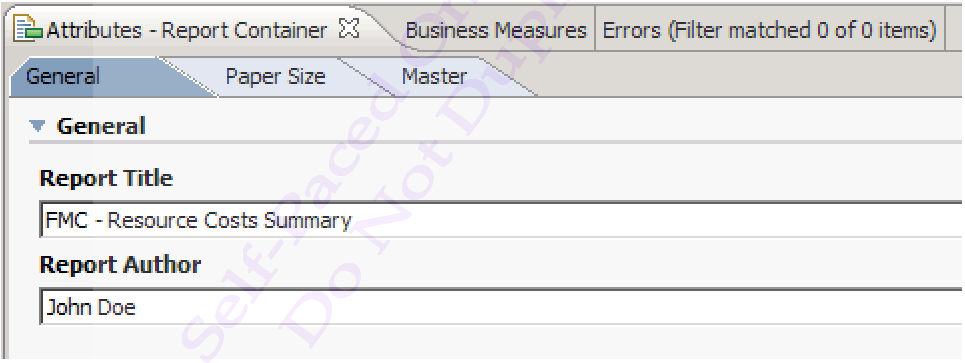
☑ **Bold** ☐ **Italic**

__ 24. To update the value of the report title field, in the **Outline** view, click the **Structure** button and select **Report Container**.



__ 25. In the **Attributes** pane, select the **General** tab; under **Report Title**, enter `FMC - Resource Costs Summary`.

__ 26. Under **Report Author**, enter `John Doe`.


Attributes - Report Container
Business Measures
Errors (Filter matched 0 of 0 items)
General
Paper Size
Master

General

Report Title: FMC - Resource Costs Summary

Report Author: John Doe

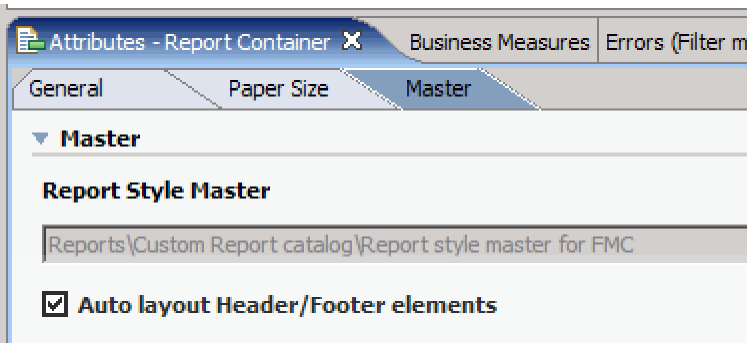
__ 27. Select the **Master** tab and click **Select**.

__ 28. Select **Report Style Master for FMC**.

__ 29. Click the **Auto layout Header/Footer elements**.

__ 30. Click **OK.**

Now the Report style master for FMC will be applied.



Master

Report Style Master

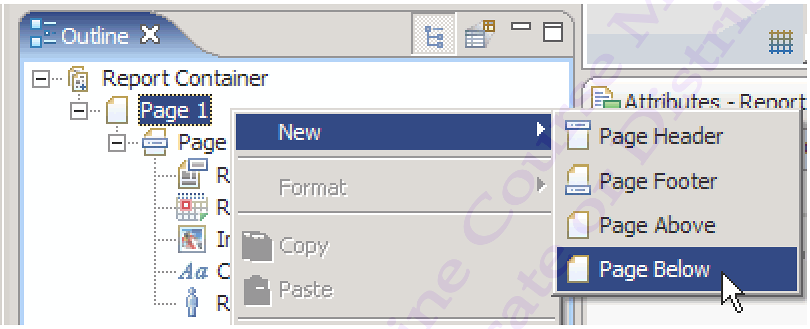
Reports\Custom Report catalog\Report style master for FMC

☑ **Auto layout Header/Footer elements**

__ 31. Save your work (Ctrl+S).

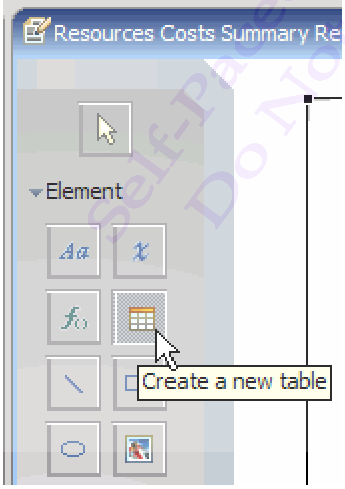
Part 3: Adding report details

__ 1. To add a new page, in the **Outline** view, right-click **Report Container —> Page 1** and select **New —> Page Below**.



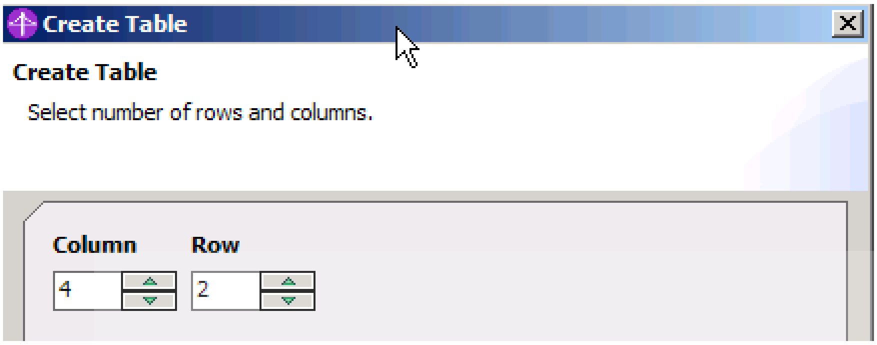
__ 2. Select **Page 2 —> Page Detail** from the **Outline**.

__ 3. In the **report** editor, click the **Create a new table** button from the palette and drop onto the top of the second page of the report.



The **Create Table** window appears.

__ 4. Change the number of columns to 4 and click **OK**.



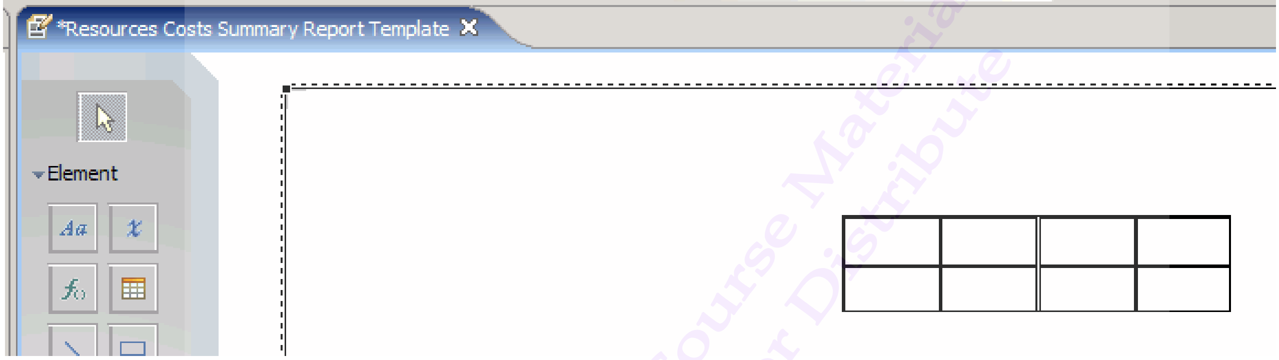
Create Table

Create Table

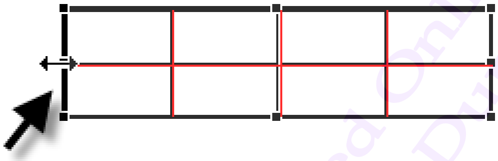
Select number of rows and columns.

Column 4 **Row** 2

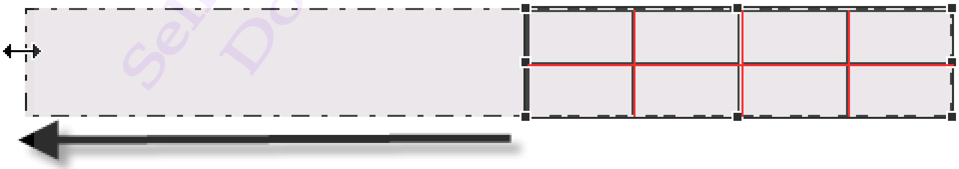
__ 5. You will see the table on the designer.



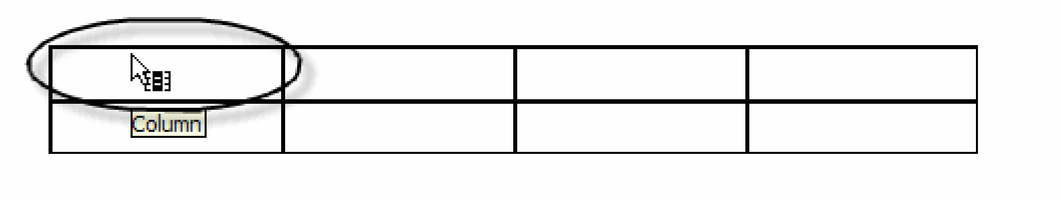
__ 6. Select the middle point of the left border of the table.



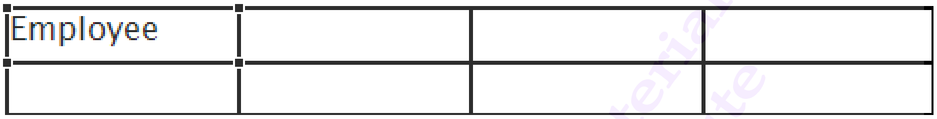
__ 7. Use the mouse to drag the left border to the left.



__ 8. Double-click the top-left cell of the table.



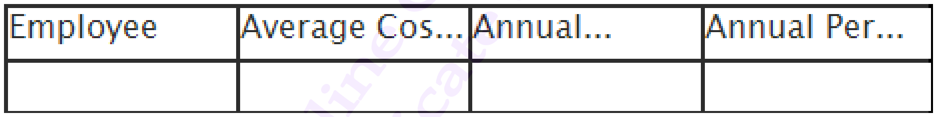
__ 9. Enter **Employee**.



Employee			

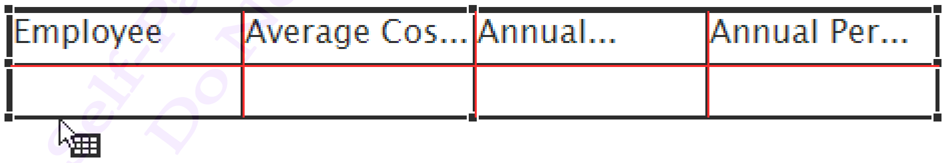
__ 10. Label the remaining cells in the first row as follows:

`Average Cost Per Time Unit`
`Annual Working Hours`
`Annual Per Time Unit Cost`



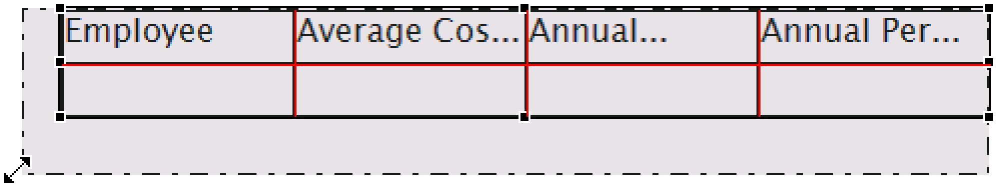
Employee	Average Cos...	Annual...	Annual Per...

__ 11. Move the cursor outside the perimeter of the table and when the cursor changes to this type of arrow: , click to select the entire table.



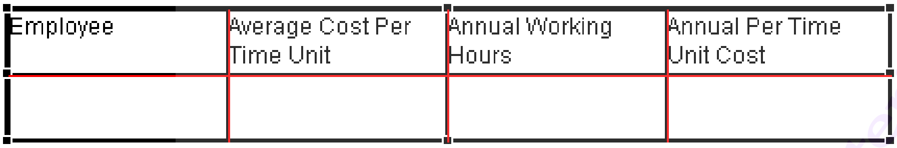
Employee	Average Cos...	Annual...	Annual Per...

__ 12. Resize the table to view the full contents of each cell.



Employee	Average Cos...	Annual...	Annual Per...

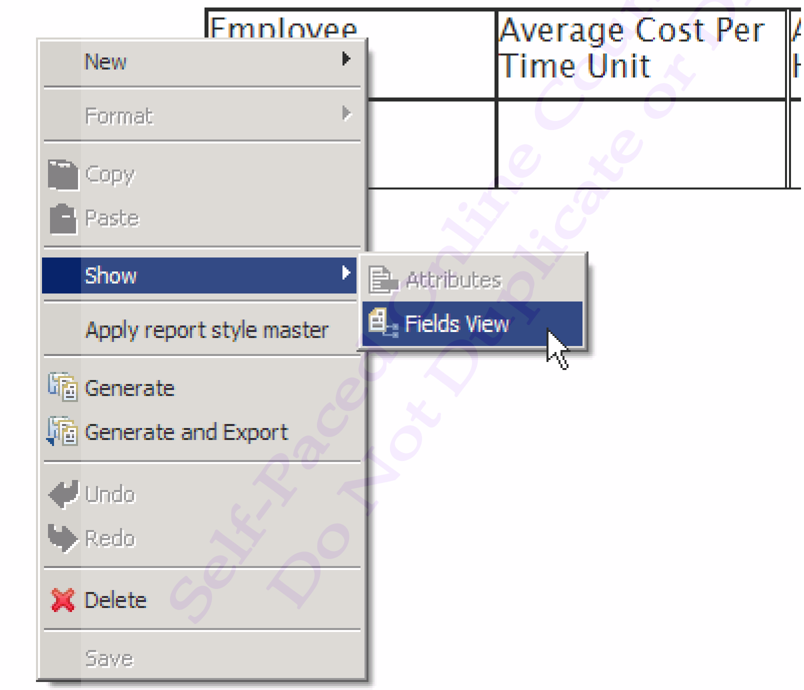
Each cell now shows its full text:



Employee	Average Cost Per Time Unit	Annual Working Hours	Annual Per Time Unit Cost

__ 13. Click **Apply**.

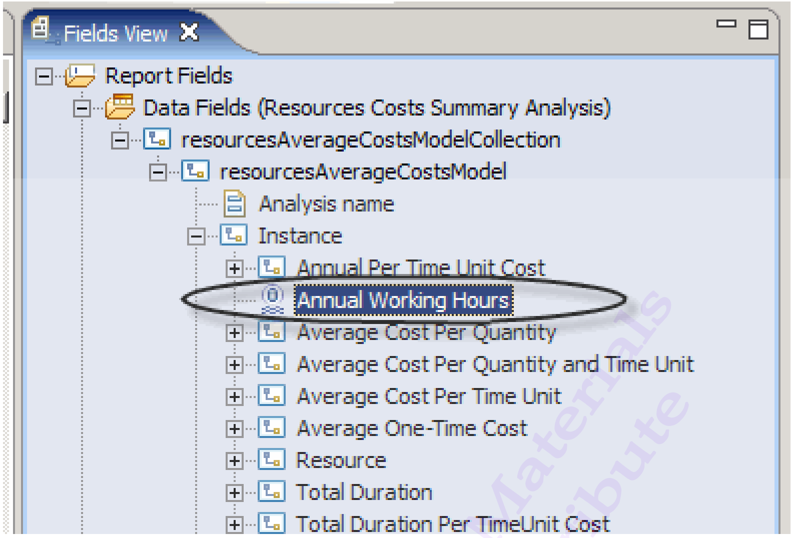
__ 14. Right-click a blank space in the report and select **Show —> Fields View**.



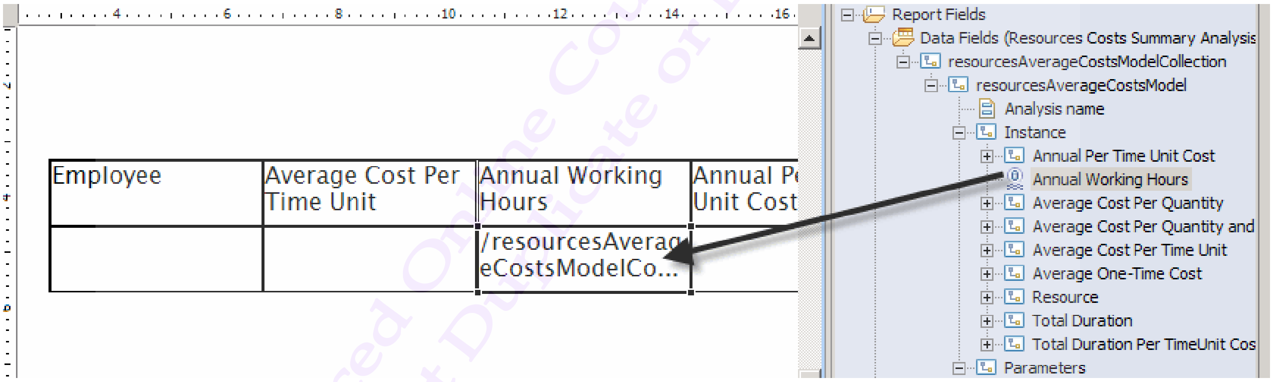
The **Fields View** pane appears on the right.

__ 15. Press Ctrl+S to save.

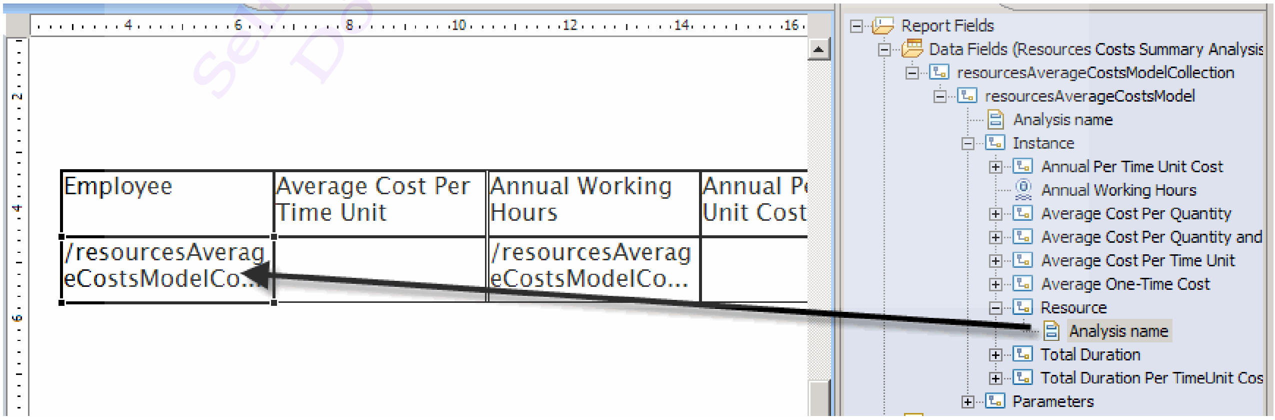
__ 16. Expand **Report Fields —> Data Fields —> resourcesAverageCostsModelCollection —> resourcesAverageCostsModel —> Instance**.


Fields View
Report Fields
Data Fields (Resources Costs Summary Analysis)
resourcesAverageCostsModelCollection
resourcesAverageCostsModel
Analysis name
Instance
Annual Per Time Unit Cost
Annual Working Hours
Average Cost Per Quantity
Average Cost Per Quantity and Time Unit
Average Cost Per Time Unit
Average One-Time Cost
Resource
Total Duration
Total Duration Per TimeUnit Cost

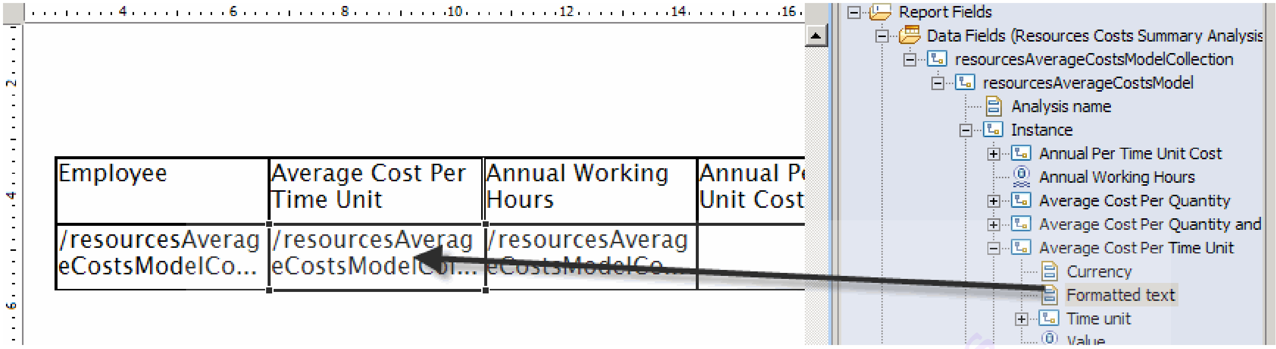
__ 17. Select **Annual Working Hours** and drag to the table of the report, into the cell under **Annual Working Hours**.


Employee
Average Cost Per Time Unit
Annual Working Hours
Annual Pe Unit Cost
/resourcesAverageCostsModelCo...
Report Fields
Data Fields (Resources Costs Summary Analysis
resourcesAverageCostsModelCollection
resourcesAverageCostsModel
Analysis name
Instance
Annual Per Time Unit Cost
Annual Working Hours
Average Cost Per Quantity
Average Cost Per Quantity and
Average Cost Per Time Unit
Average One-Time Cost
Resource
Total Duration
Total Duration Per TimeUnit Cos
Parameters

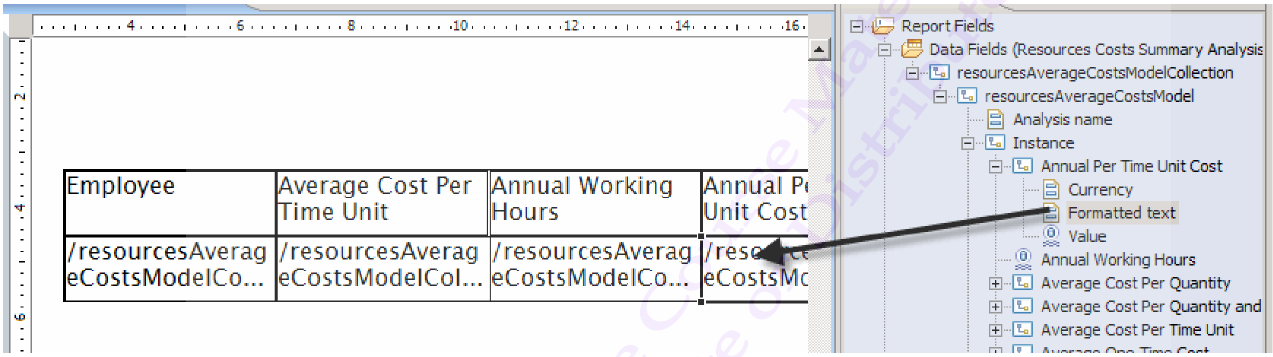
__ 18. Select **Resource —> Analysis name** and drag to the table of the report, into the cell under **Employee**.


Employee
Average Cost Per Time Unit
Annual Working Hours
Annual Pe Unit Cost
/resourcesAverageCostsModelCo...
/resourcesAverageCostsModelCo...
Report Fields
Data Fields (Resources Costs Summary Analysis
resourcesAverageCostsModelCollection
resourcesAverageCostsModel
Analysis name
Instance
Annual Per Time Unit Cost
Annual Working Hours
Average Cost Per Quantity
Average Cost Per Quantity and
Average Cost Per Time Unit
Average One-Time Cost
Resource
Analysis name
Total Duration
Total Duration Per TimeUnit Cos
Parameters

__ 19. Select **Average Cost Per Time Unit —> formattedText** and drag to the table of the report, into the cell under **Average Cost Per Time Unit**.

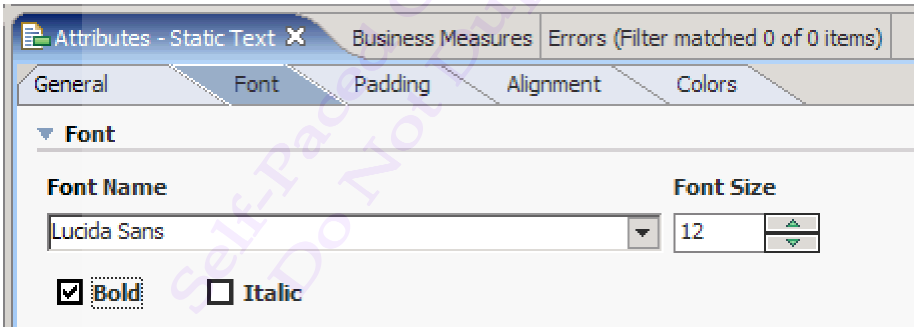

4
6
8
10
12
14
16
2
4
6
Employee
Average Cost Per Time Unit
Annual Working Hours
Annual Pe Unit Cost
/resourcesAverag eCostsModelCo...
/resourcesAverag eCostsModelCol...
/resourcesAverag eCostsModelCo...
Report Fields
Data Fields (Resources Costs Summary Analysis
resourcesAverageCostsModelCollection
resourcesAverageCostsModel
Analysis name
Instance
Annual Per Time Unit Cost
Annual Working Hours
Average Cost Per Quantity
Average Cost Per Quantity and
Average Cost Per Time Unit
Currency
Formatted text
Time unit
Value

__ 20. Select **Annual Per Time Unit Cost —> formattedText** and drag to the table of the report, into the cell under **Annual Per Time Unit Cost**.


4
6
8
10
12
14
16
2
4
6
Employee
Average Cost Per Time Unit
Annual Working Hours
Annual Pe Unit Cost
/resourcesAverag eCostsModelCo...
/resourcesAverag eCostsModelCol...
/resourcesAverag eCostsModelCo...
/resourcesAverag eCostsMc
Report Fields
Data Fields (Resources Costs Summary Analysis
resourcesAverageCostsModelCollection
resourcesAverageCostsModel
Analysis name
Instance
Annual Per Time Unit Cost
Currency
Formatted text
Value
Annual Working Hours
Average Cost Per Quantity
Average Cost Per Quantity and
Average Cost Per Time Unit
Average One Time Cost

__ 21. Close the **Fields view**.

__ 22. Select the **Employee** cell and in the **Attributes** pane, select the **Font** tab, and click the **Bold** check box.



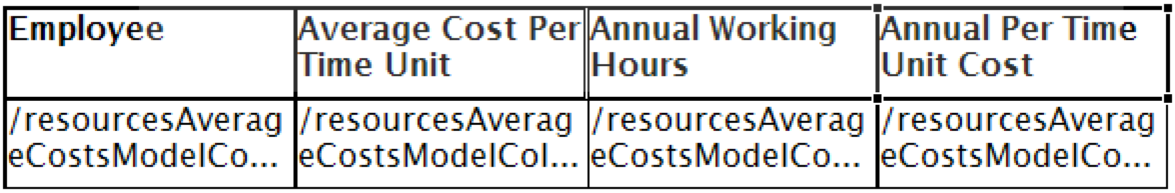
Font

Font Name: Lucida Sans

Font Size: 12

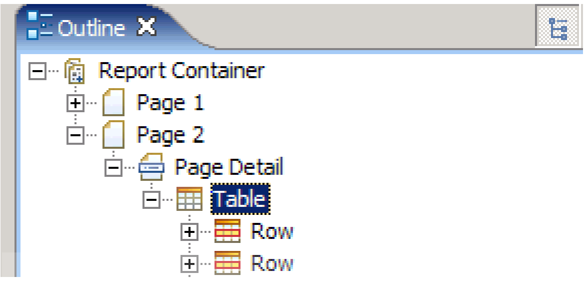
☑ **Bold** ☐ **Italic**

__ 23. Repeat the previous step for the remaining cells in the first row.



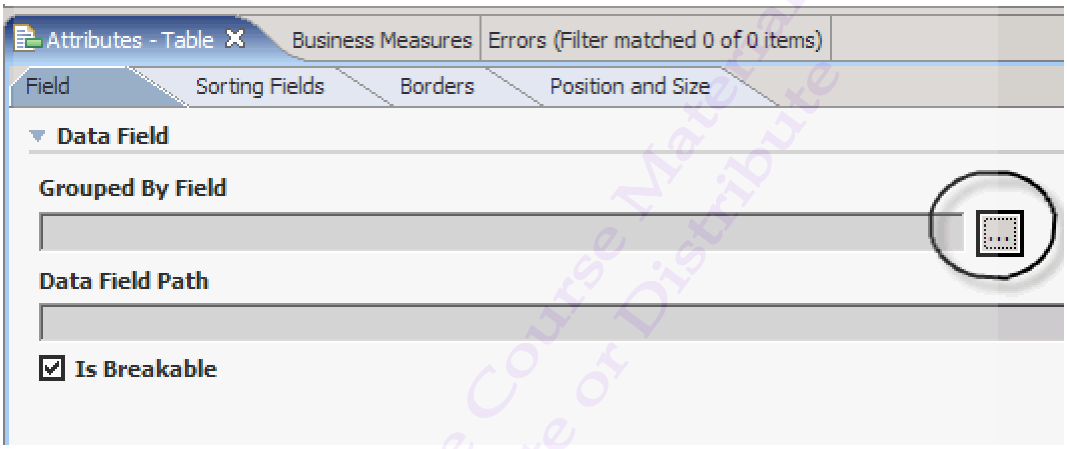
Employee	Average Cost Per Time Unit	Annual Working Hours	Annual Per Time Unit Cost
/resourcesAverag eCostsModelCo...	/resourcesAverag eCostsModelCol...	/resourcesAverag eCostsModelCo...	/resourcesAverag eCostsModelCo...

__ 24. In the **Outline** view, under **Page 2** —> **Page Detail**, select **Table**.

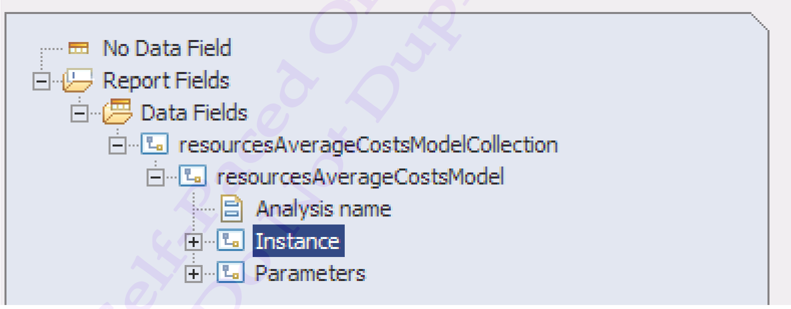


The table in the report is selected.

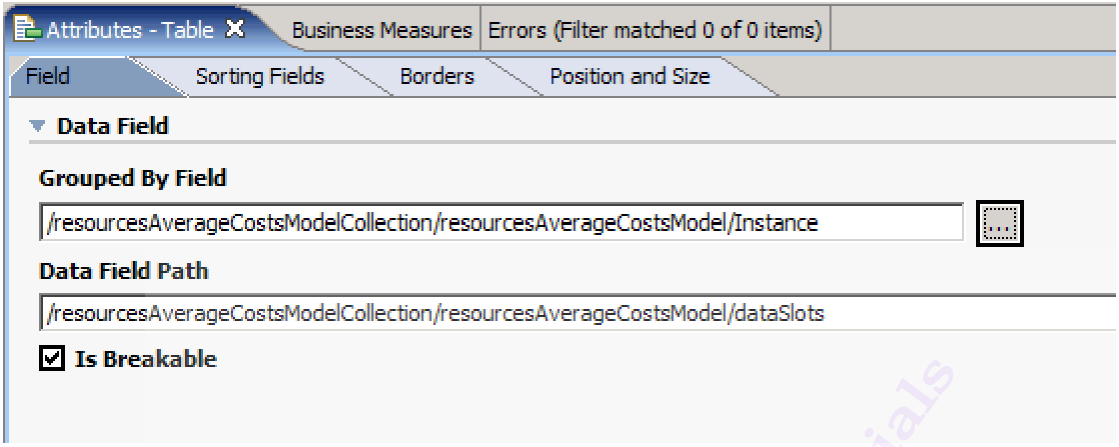
__ 25. In the **Attributes** pane, click the … button next to **Grouped By Field**.



__ 26. Expand all, and select **instance** under **Data Fields** —> **resourcesAverageCostsModelCollection** —> **resourcesAverageCostsModel**.



__ 27. Click **OK**.



Grouped By Field
/resourcesAverageCostsModelCollection/resourcesAverageCostsModel/Instance

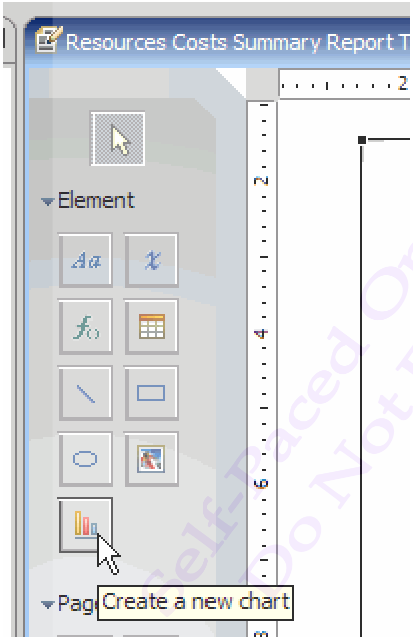
Data Field Path
/resourcesAverageCostsModelCollection/resourcesAverageCostsModel/dataSlots

☑ **Is Breakable**

__ 28. Save your work (Ctrl+S).

Part 4: Adding report chart

__ 1. Click the **Create a new chart** button from the palette and drop onto the report, below the table.



The **New Chart Wizard** dialog box is displayed.

__ 2. Click the line chart button and enter `Average Time Cost Per Unit Chart` as **Chart Title** and click **Finish**.

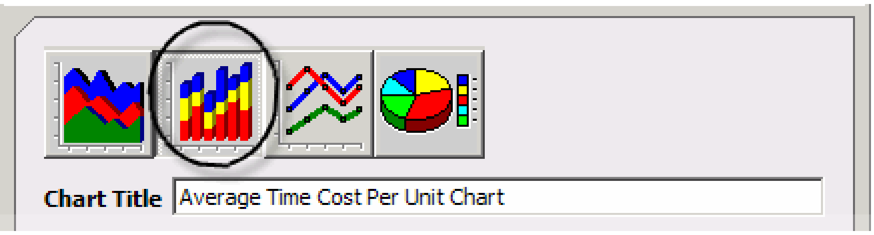
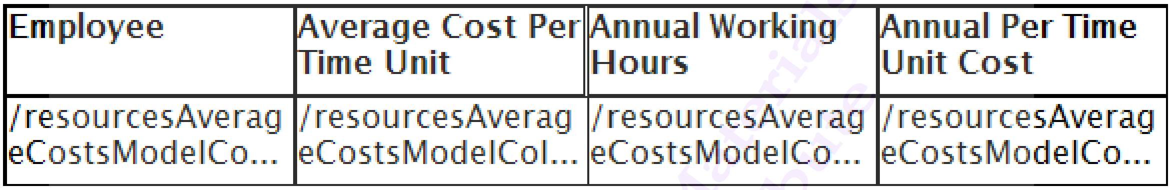
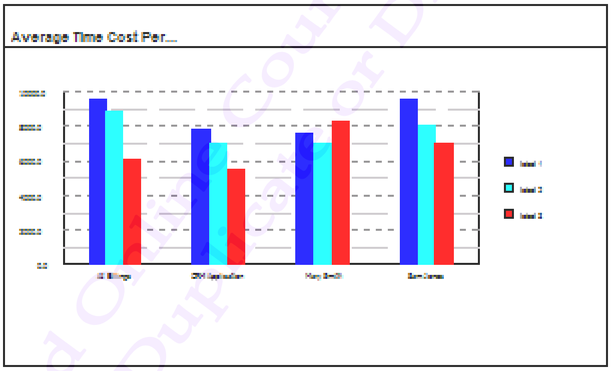


Chart Title Average Time Cost Per Unit Chart

A sample bar chart will display on the designer.

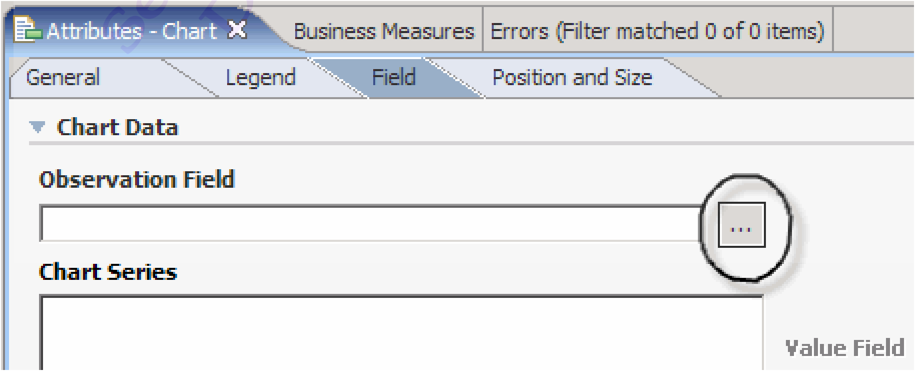


Employee	Average Cost Per Time Unit	Annual Working Hours	Annual Per Time Unit Cost
/resourcesAverageCostsModelCo...	/resourcesAverageCostsModelCol...	/resourcesAverageCostsModelCo...	/resourcesAverageCostsModelCo...

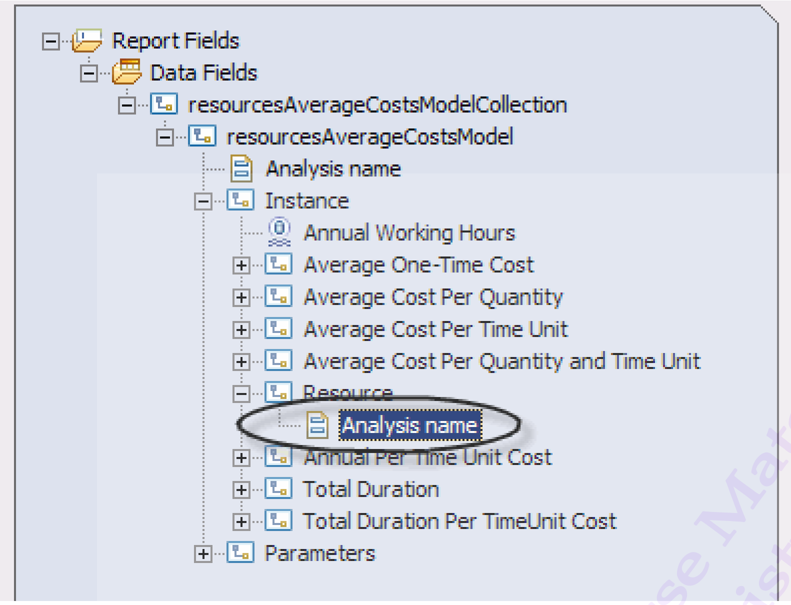


__ 3. In the **Attributes - Chart** pane, select the **Field** tab.

__ 4. Next to **Observation Field**, click the … button.



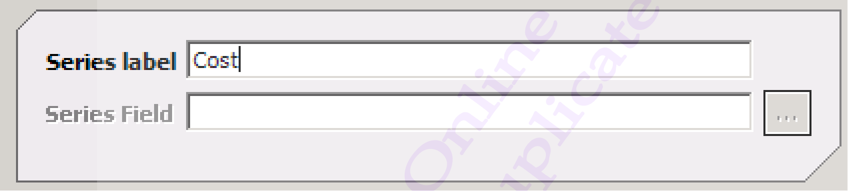
__ 5. From the **Data Field Selection** page, select **Report Fields —> Data Fields —> resourcesAverageCostsModelCollection —> resourcesAverageCostsModel —> Instance —> Resource —> Analysis name**.



- Report Fields
  - Data Fields
    - resourcesAverageCostsModelCollection
      - resourcesAverageCostsModel
        - Analysis name
        - Instance
          - Annual Working Hours
          - Average One-Time Cost
          - Average Cost Per Quantity
          - Average Cost Per Time Unit
          - Average Cost Per Quantity and Time Unit
          - Resource
            - Analysis name
          - Annual Per Time Unit Cost
          - Total Duration
          - Total Duration Per TimeUnit Cost
        - Parameters

__ 6. Click **OK**.

__ 7. Under **Chart Series**, click **Add** and enter `Cost` as a **Series Label**.



Series label Cost

Series Field

__ 8. Click **OK**.

__ 9. Click the ... button next to **Value Field.**

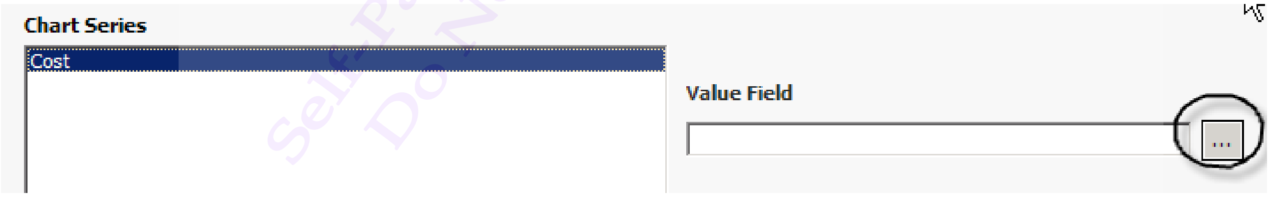
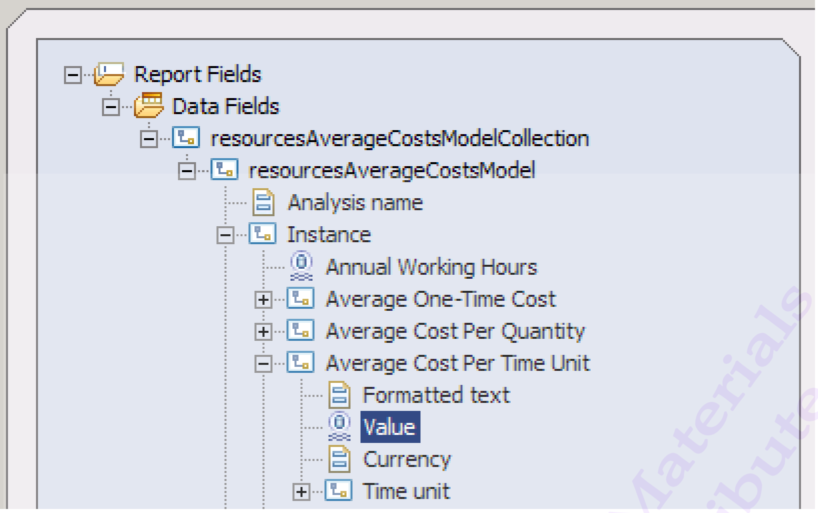


Chart Series

Cost

Value Field

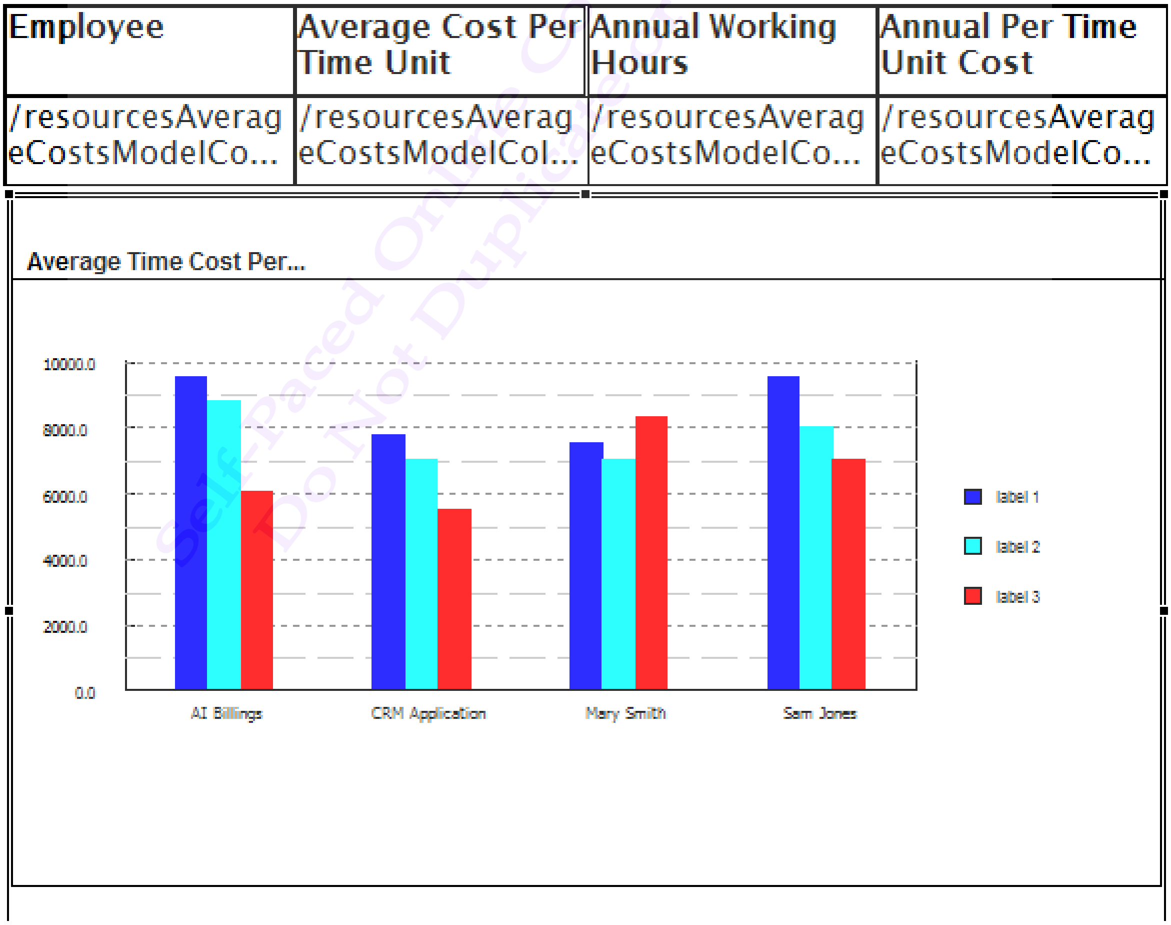
__ 10. Select **Report Fields —> Data Fields —> resourcesAverageCostsModelCollection —> resourcesAverageCostsModel —> Instance —> Average Cost Per Time Unit —> Value**.



- Report Fields
  - Data Fields
    - resourcesAverageCostsModelCollection
      - resourcesAverageCostsModel
        - Analysis name
        - Instance
          - Annual Working Hours
          - Average One-Time Cost
          - Average Cost Per Quantity
          - Average Cost Per Time Unit
            - Formatted text
            - Value
            - Currency
            - Time unit

__ 11. Click **OK**.

__ 12. Resize the chart to enlarge the graph.



Employee	Average Cost Per Time Unit	Annual Working Hours	Annual Per Time Unit Cost
/resourcesAverageCostsModelCo...	/resourcesAverageCostsModelCol...	/resourcesAverageCostsModelCo...	/resourcesAverageCostsModelCo...

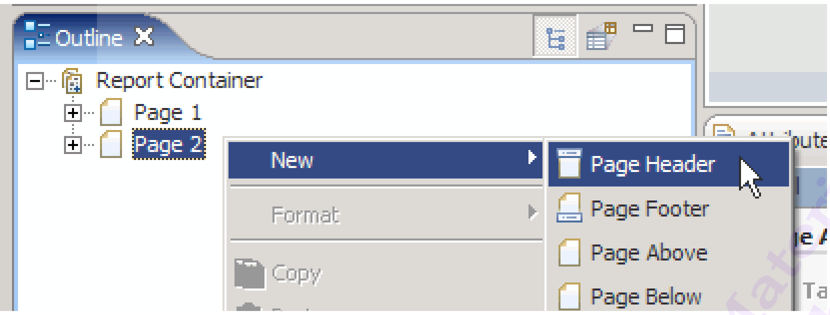
__ 13. Save your work (Ctrl+S).

Part 5: Adding header and footer to report

Although you have applied the report style master to the report templates, data from the style master will not appear in the report templates unless you add a header or footer to the templates.

__ 1. To add a footer on the detail page, go to the **Outline** pane.

__ 2. Right-click **Page 2** and select **New —> Page Header**.



__ 3. Right-click **Page 2** again and select **New —> Page Footer**.

__ 4. Save your work (Ctrl+S).

Note

If you make any changes, make sure you save your changes before generating the report. Reports are generated based on the latest saved version.

__ 5. To generate the report, right-click the **report editor**, and select **Generate and Export**.

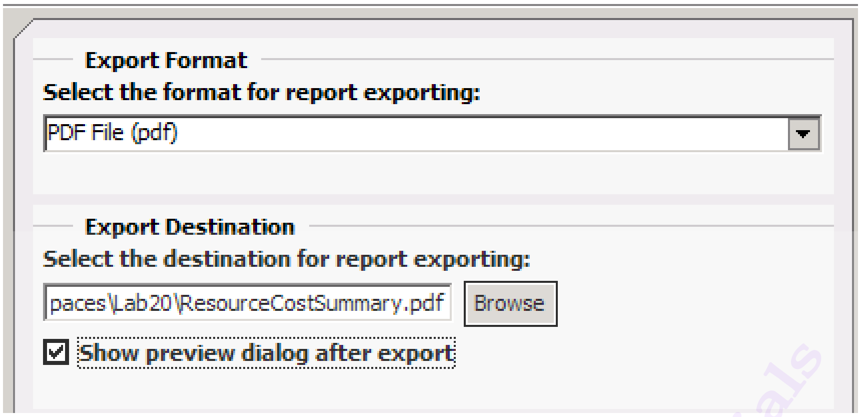
__ 6. If the **Fonts Warning** text box appears, click **Cancel.**

__ 7. Select the **PDF File (pdf)** option from **Export Format**.

__ 8. Under **Export Destination**, click **Browse**, type `C:\ClassWorkspaces\Lab20\ResourceCostSummary.pdf`, and click **Save**.

- If the directory does not exist, Modeler will create a new folder.

__ 9. Select the **Show preview dialog after export** option.



Export Format

Select the format for report exporting:

PDF File (pdf)

Export Destination

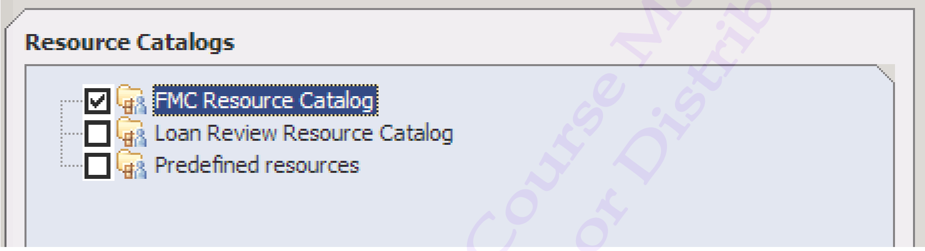
Select the destination for report exporting:

paces\Lab20\ResourceCostSummary.pdf

☑ Show preview dialog after export

__ 10. Click **Finish**.

__ 11. Select **FMC Resource Catalog** from **Resource Catalogs**.



Resource Catalogs

☑ FMC Resource Catalog

☐ Loan Review Resource Catalog

☐ Predefined resources

__ 12. Click **Next**.

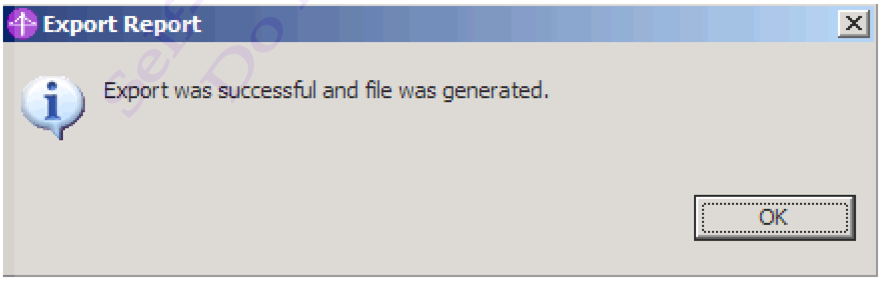
__ 13. Accept the default **Start Time** and **End Time**, and click **Finish**.

The report preview window is displayed, and the pdf file is created in the directory that you just specified.

Compare your report to that shown on the next two pages.

__ 14. Close the **Preview** window when finished.

__ 15. Click **OK** when the **Export Report** dialog box appears.



Export Report

Export was successful and file was generated.

__ 16. Your report should look similar to the following:

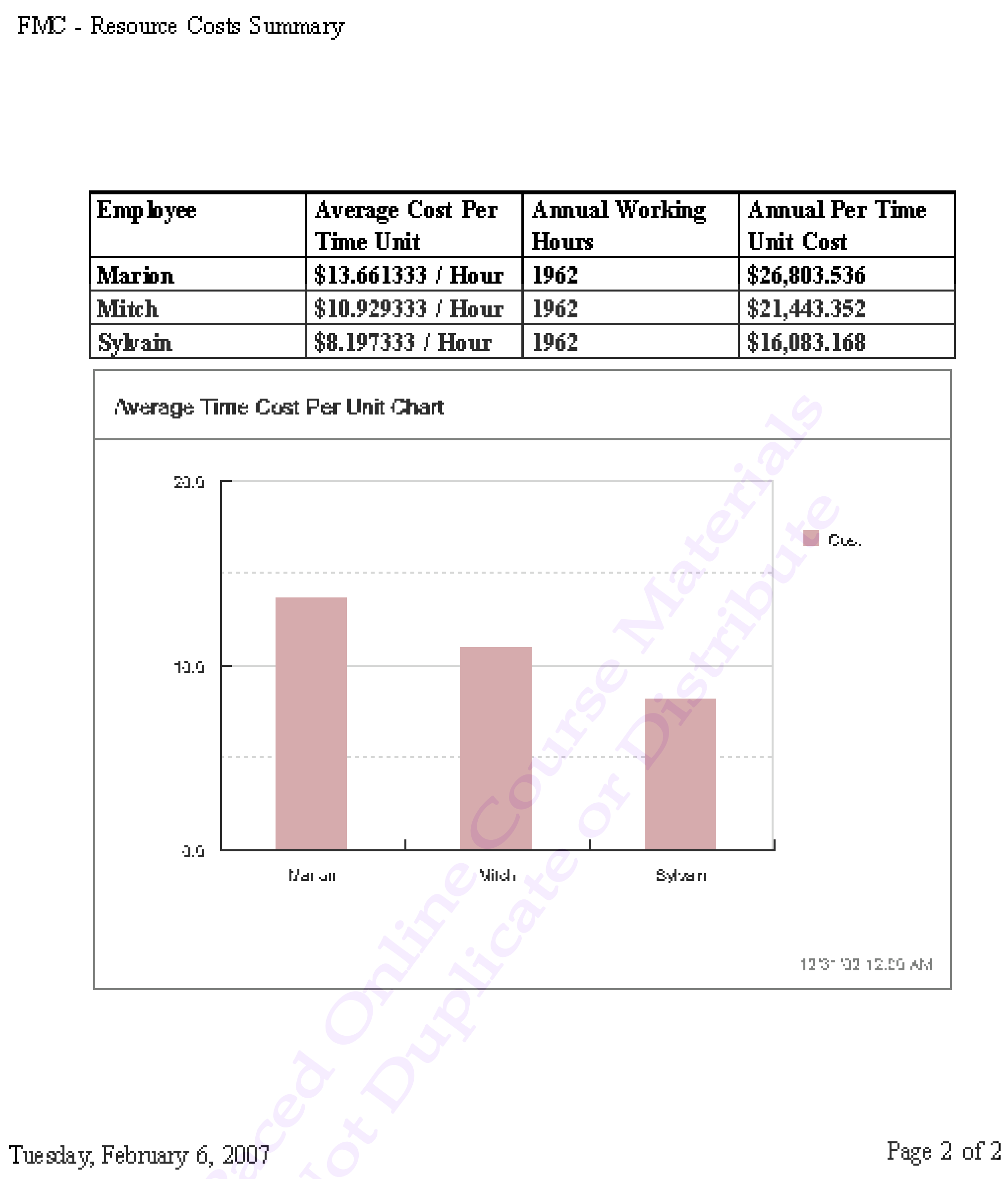
FMC - Resource Costs
Summary

Tuesday, February 6, 2007

Created by

John Doe

The image on the cover page may vary.



FMC - Resource Costs Summary

Employee	Average Cost Per Time Unit	Annual Working Hours	Annual Per Time Unit Cost
Marion	$13.661333 / Hour	1962	$26,803.536
Mitch	$10.929333 / Hour	1962	$21,443.352
Sylvain	$8.197333 / Hour	1962	$16,083.168

Average Time Cost Per Unit Chart

20.0
10.0
0.0
Marion
Mitch
Sylvain
Cos.
12/31/02 12:00 AM

Tuesday, February 6, 2007

Page 2 of 2

__ 17. Exit Modeler.

Part 6: Review questions

Your instructor will review the following questions with you.

__ 1. Name some of the categories of data sources used in the Modeler reports.

____

__ 2. What data source would contain information by a repository location of a version control system?

____

__ 3. What is the function of the report style master?

__ 4. What is the scope used for, when creating a query?

END OF EXERCISE

Exercise 9. There is no exercise for this unit

Exercise 10.There is no exercise for this unit

Solution:

Exercise 1 — Review questions

There are no review questions in this unit.

Exercise 2 — Review questions

There are no review questions in this unit.

Exercise 3 — Review questions

There are no review questions in this unit.

Exercise 4 — Review questions

__ 1. What is the difference between task duration and resource time requirements?

Duration is used to determine cycle time.

Resource time required is use to determine cost.

__ 2. What is the function of the resource pool during simulation?

The resource pool allows the selected resources to be made available to the simulation. By default, all resources defined in your project are available. If the roles are checked, the simulation will supply as many roles as needed. The number of roles can be limited.

__ 3. When do you want to use interrupt during simulation?

Interrupts allow the monitoring of specific conditions, like cost overruns or excessive time spent waiting for resources. The simulation run is automatically suspended when a condition occurs.

__ 4. How do you turn off the animation during simulation so that it runs faster?

Go to Simulation Settings, and clear the Display Animation during simulation check box.

Exercise 5 — Review questions

__ 1. What is profile specification?

It provides a way of reviewing, documenting, and validating the values that are used during the run of a simulation.

__ 2. What is the function of process cases summary?

It shows each of the process cases (paths) through the process.

__ 3. What is dynamic analysis?

Analysis of the results of a process simulation from different perspectives:

Time, money, and statistics

__ 4. Which analysis shows the differences and similarities in simulation results between two different simulation runs?

Processes comparison analysis

Exercise 6 — Review questions

__ 1. What is the advantage of using statistical distributions in simulation?

Statistical distributions allow a model more accurately reflect the real world behavior of the business process.

Distributions help build randomness into a model, something averages can°¶t do.

__ 2. Where are probability distributions used in the Modeler?

In Modeler, probability distributions can be assigned to:

- **Token creation**
- **Task completion times**
- **Task costs**
- **Task revenue**

__ 3. Which distribution assigns a constant probability for all values?

Uniform distribution

__ 4. What are the restrictions when using token creation based on a periodic timetable?

- **Only one timetable can be selected for each token creation setting.**
- **The timetable cannot contain overlapping intervals (these intervals will be filtered out from the available selection).**
- **Only one level of exemption schedule is supported for selected timetables.**
- **Subsequent levels of exemption will be ignored.**

Exercise 7 — Review questions

__ 1. What types of analysis are required for process re-engineering?

Business, people, process, and technology

__ 2. What is process goal analysis?

Process goal analysis is used to analyze a process to determine how well it supports the organization’s goals.

The performance of the process is analyzed and evaluated against its goals.

It allows the focus to be set on increasing the probabilities of process cases that support organizational goals.

__ 3. When do you need to conduct redesign analysis?

When you want to identify improvement opportunities within a process or measure the effects of redesigning a process

__ 4. What are the four business analysis components?

- **Process goals: the purpose of the project or process**
- **Metrics: process analysts identify what to capture in the model**
- **Proficiencies: identify what the process and participants do well**
- **Pain points: provide focus for model creation and analysis**

Exercise 8 — Review questions

__ 1. Name some of the categories of data sources used in the Modeler reports.

- **Business models**
- **Dynamic analysis**
- **Predefined queries**
- **Query (user defined)**
- **Simulation description**
- **Static analysis**
- **Team support**

__ 2. What data source would contain information by a repository location of version control system?

Team support data sources

__ 3. What is the function of the report style master?

The report style master enables you to reuse header and footer information for multiple report templates

__ 4. What is the scope used for, when creating a query?

The purpose of scope is to determine how much of the project is to be included in the search.

Exercise 9 — Review questions

There are no review questions in this unit.

Exercise 10 — Review questions

There are no review questions in this unit.